ILLUSTRATIONS

OF THE

ZOOLOGY OF SOUTH AFRICA;

CONSISTING CHIEFLY OF

FIGURES AND DESCRIPTIONS OF THE OBJECTS OF NATURAL HISTORY

COLLECTED DURING

AN EXPEDITION INTO THE INTERIOR OF SOUTH AFRICA,

IN THE YEARS 1834, 1835, AND 1836;

FITTED OUT BY

"THE CAPE OF GOOD HOPE ASSOCIATION FOR EXPLORING CENTRAL AFRICA."

BY ANDREW SMITH, M.D.,

DEPUTY INSPECTOR GENERAL OF ARMY HOSPITALS;

DIRECTOR OF THE EXPEDITION.

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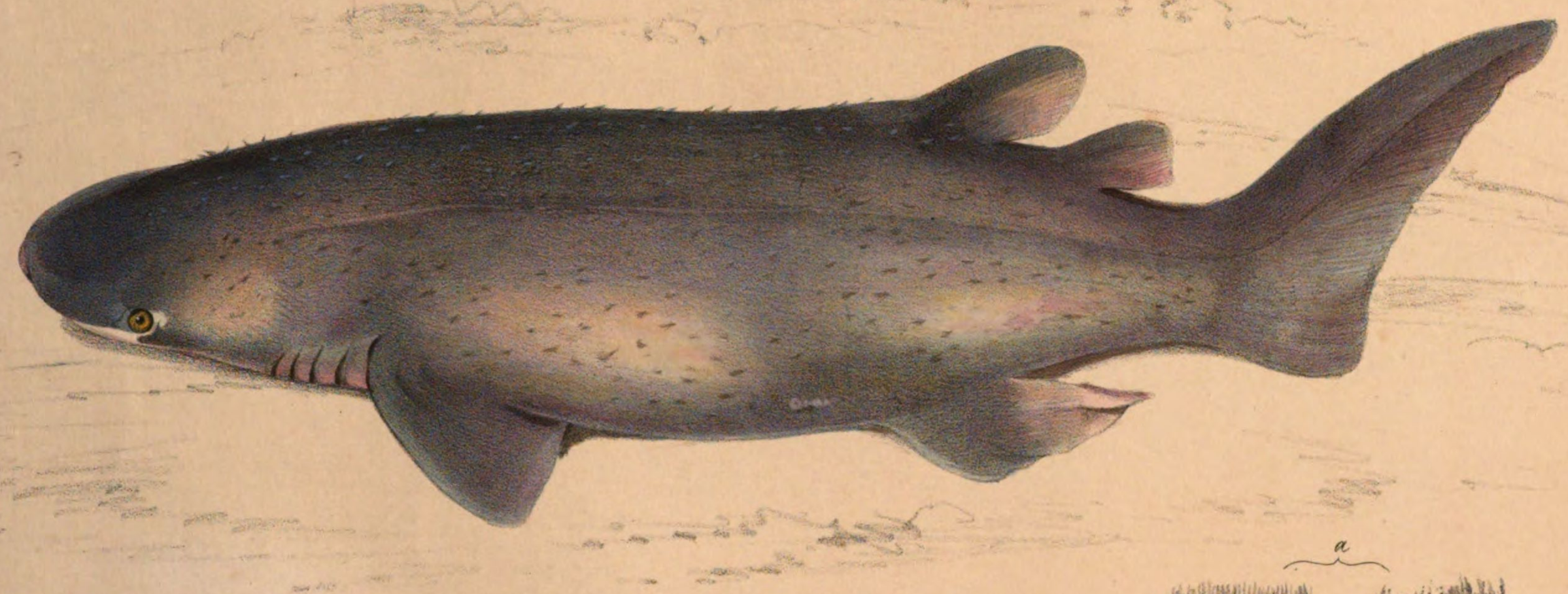

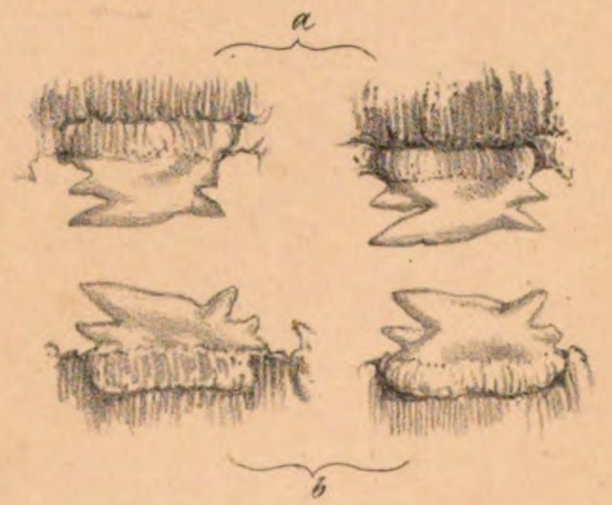

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ECHINORHINUS OBESUS.

(Pisces.—Plate 1.)

ECHINORHINUS OBESUS.—Smith.

Pisces.—Plate I. (Male.)

E. obesus; capite supra, dorsoque ad pinnam primam plumbeis; dorsi partibus posterioribus, corporis lateribus, abdomineque cupreo-flavis, purpureo brunneoque umbratis; mento, nasi lateribus, maculâque pone oculos albis; oculis cupreo-viridibus.

Colour.—The head and back, as far as the first dorsal fin, dark leaden grey; the rest of the back, the sides and the belly, pale coppery yellow clouded with purple and brownish tints; and the belly besides is marked with blotches of light vermillion red; the fins towards their bases reddish brown tinged with dull grey, towards their extremities a lighter shade of the same colour; chin, sides of muzzle, and sometimes a spot behind the eye, dull white; eyes, coppery green.

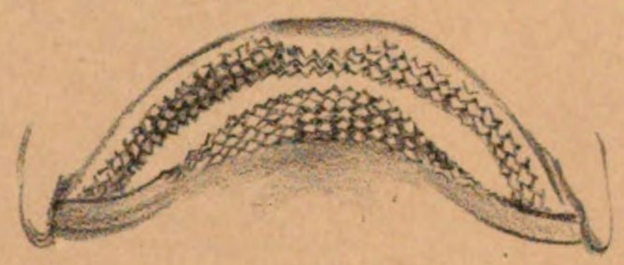
Form, &c.—Body very thick in proportion to its length, with only a slight diminution in size towards the tail; the back in front of the first dorsal fin nearly straight; the head flat above, and slightly sloping to the muzzle, which is rounded; nostrils transverse, and each partially divided by a narrow membranous lobule, which projects backwards from its anterior margin; their position is nearly over the most projecting or central portion of the upper jaw, considerably nearer to the eyes than the tip of the snout, and about half way between the latter and the angle of the mouth. Eyes, rather nearer to a line raised from the angle of the mouth than to the nostrils; pupil, circular and small; postocular spiracle, scarcely visible. Gape, wide and arched, having at each corner a triangular fold of skin formed by the union of the upper and lower lips. Teeth regularly placed upon each jaw, only one row in use at a time, the rest reclined; they are large, compressed, and somewhat quadrangular, the cutting edges nearly horizontal, and both of their sides are generally bicuspidate, (as will be seen by referring to the figures *a* and *b*, where the former represent the teeth of the upper jaw, and the latter represent those of the lower). Branchial openings all in front of pectoral fins; the first not much more than half the length of the fifth. Pectoral fins rather small, the hinder edges nearly square; the dorsal fins are small, the first narrower at its base than at its extremity, which is slightly rounded; the second nearly throughout of equal breadth, the hinder edge almost

square; the ventral fins short, broader behind than at their bases, and their posterior edges slightly undulated; the caudal fin entire, somewhat triangular and slightly falciform, the upper portion high above the line of the back, the lower scarcely below the line of the body immediately in front of it. Lateral line very distinct, commencing above branchial openings, and extending nearly without curve or undulation to the commencement of the caudal fin, from thence it ascends the latter, and extends along it, nearer to its anterior than posterior edge, until it reaches its upper extremity; at its origin this line is nearer to the middle of the back than the base of the pectoral fin; to the touch it feels slightly rough, which arises from its being beset with a number of minute prickles, which are most distinctly seen in preserved specimens. The surface of the skin both on the body and fins is more or less sprinkled with strong bony-looking spines, with large circular and flattened bases, which are striated from the centre towards the circumference. These spines vary in size as well as form, some being hooked, others quite straight; in some places they are disposed in clusters, in others they are solitary, and on the extremity of the muzzle are nearly wanting. The appendages to the ventral fins in the male seldom extend much beyond their posterior margins.

DIMENSIONS.

	Feet.	Inches.
Length from the tip of the nose to the end of the caudal fin	6	6½
to the eye	0	6½
to the first dorsal fin	3	9½
to the pectoral fins	1	6½
to the anterior edge of the upper jaw	0	6
to the base of the ventral fins	3	7½
Distance between the dorsal fins	0	4¼
Length from the hinder edge of the second dorsal fin to the base of the caudal fin	0	4
of the tail from the base to the highest point	1	5½

This shark is comparatively rare at the Cape of Good Hope. It is described by the fishermen as sluggish and unwieldy in its movements, and but seldom to be observed towards the surface of the water. When they obtain specimens, it is generally at a time when they are fishing in deep water, and when the bait with which the hooks are armed is near to the bottom. In this respect it resembles the *Scyllia*, or ground-sharks; and, if we were to regard only its internal organization, we should be disposed to consider it as closely allied to that genus.



MUSTELUS MEGALOPTERUS.

(Pisces_Plate 2.)

MUSTELUS MEGALOPTERUS.—Smith.

Pisces.—Plate II. (Male.)

M. suprà viridi-brunneus, purpureo-tinctus, infra subochreus, regionibus ante pinnas pectorales et post ventrales rubro-umbratis; corporis lateribus brunneo-purpureis. Oculis cupreo-viridi-flavo-nitentibus.

Longitudo 4 ped. 4 unc.

Colour.—Hind-head and back as far as the first dorsal fin, greenish brown glossed with purple—the colour is unequal as to depth, on the hind-head it is lightest, and is there slightly shaded with ochre yellow; anterior and lateral parts of the head greyish purple, faintly freckled or clouded with vermillion red; back, behind first dorsal fin, purplish grey, slightly clouded with clove brown; sides of body, light brownish purple; under surface, from tip of lower jaw to caudal fin, ochry yellow of various tints, the parts immediately behind the ventral fins, and those in front of the pectorals, highest coloured, and freely mottled with vermillion red. Pectoral and ventral fins, purplish grey shaded with brownish red, the latter are besides faintly clouded with vermillion red; the remaining fins between greenish and purplish grey—the first dorsal, nearly pure grey at its base, and the caudal has an obscure ochry stripe in the direction in which it is traversed by the vertebral column. Eyes a bright greenish yellow, with a strong metallic lustre.

Form, &c.—Anterior portion of body robust, and sub-triangular, with an acute carina extending between the hindhead and the anterior edge of the first dorsal fin; posterior portion of body slender, somewhat cylindrical, and with the rudiments of a carina between the first and second dorsal; the surface harsh and rough, arising from the skin being every where closely covered with small triangular and carinated scales,—the carina is central, forms the apex of the scale, and projects slightly over the base of the scale next in succession. Head, above somewhat flattened, below and on the sides rather convex; hind-head broad, nose rather narrow and inclined to pointed; teeth small, three-sided, and with three distinct angles; the apical portion of each slender, slightly prolonged, and acute at the point. Eyes, deeply set, pupil linear and oblique, nictating membrane large; post-ocular spiracles rather large, oval, and situated directly behind the outer canthus; the two last branchial, opening, situated above and behind the anterior margin of pectoral fin, appendages long and rather slender.

MUSTELUS MEGALOPTERUS.

DIMENSIONS.

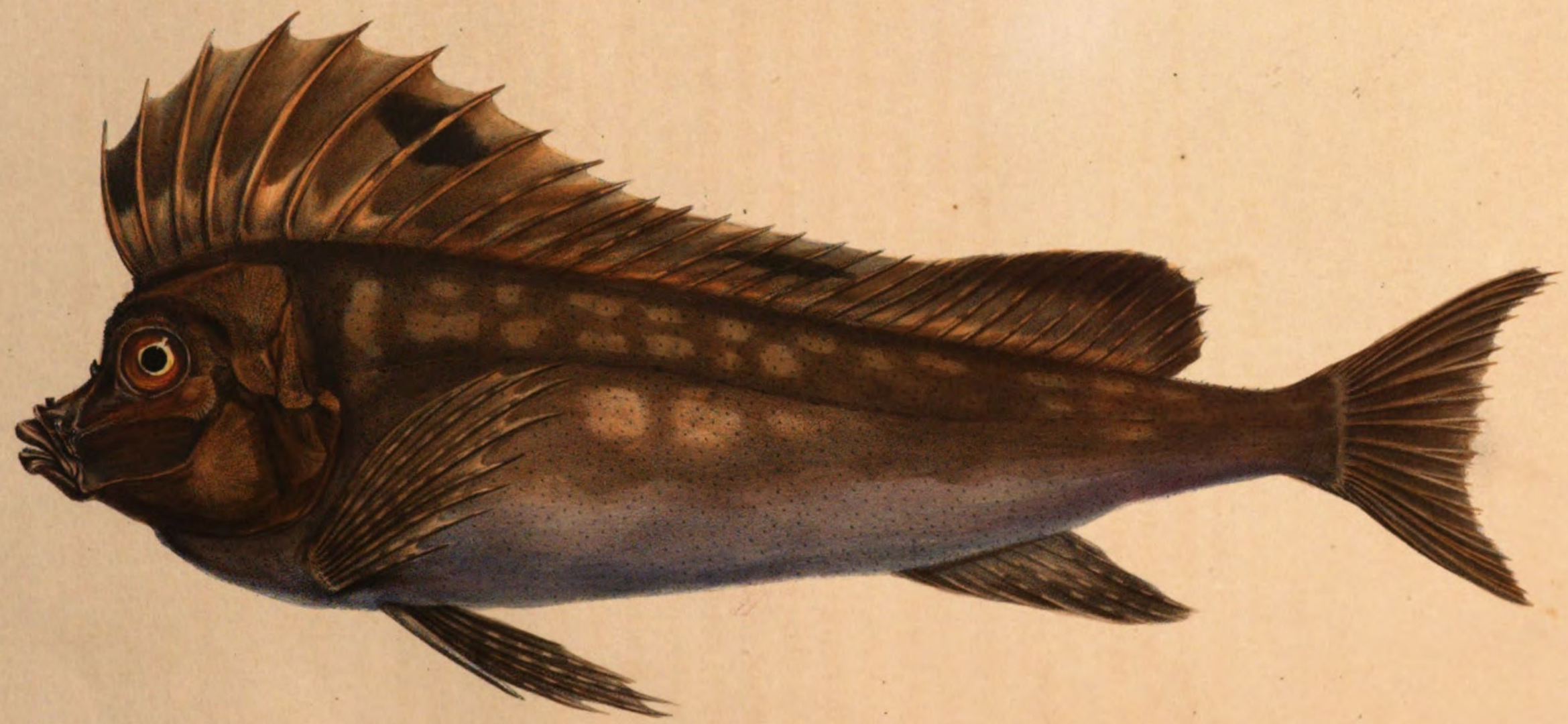
	Feet.	Inches.	Lines.
Length from nose to apex of caudal fin	4	9	0
Circumference immediately before first dorsal fin	1	5	0
Distance between nose and eye	0	3	0
Distance between nose and angle of mouth	0	3	6
Distance between nose and nostrils	0	1	0
Distance between nose and middle of upper jaw	0	2	9
Breadth between the angles of the mouth	0	4	0
Distance between eye and post ocular spiracle	0	0	4
Distance between eye and first branchial opening	0	4	0
Distance between nose and anterior edge of first dorsal fin	0	17	6
Distance between hinder-edge of first dorsal and anterior edge of second dorsal	0	12	9
Distance between base of second dorsal behind, and base of caudal fin	0	5	0
Distance between nose and anterior edge of pectoral fins	0	10	0
Distance between base of pectoral fin behind, and anterior edge of ventrals	0	13	9
Distance between base of ventrals behind, and anterior edge of anal fin	0	8	0
Distance between posterior edge of anal behind, and base of caudal fin	0	4	0
Length of anal appendages	0	6	6

The chief external differences between the male and female consist in the latter wanting the anal appendages, and having the fins, particularly the pectoral ones, proportionably smaller.

In the course of several years during which the fishermen of Cape Town were engaged by me in collecting cartilaginous fishes, only a very few specimens of this species were obtained. Their want of success, however, probably arose more from the species resorting to situations little visited by fishermen during their ordinary avocations, than from the scarcity of specimens. It feeds upon *mollusca, crustacea, &c.*, and in quest of these it haunts principally the rocky, or broken parts of the coast.

Specimens of this species are occasionally procured, in which the ground colour, similar to that described, is freely spotted with dusky black blotches, very various as to size.

As I have not had an opportunity of ascertaining whether the males of the species of this genius are provided with sacs, similar to those which occur in several of the other genera of the *Squalidæ*, and which sacs appear to be connected with the anal appendages, I would suggest the inquiry, as deserving the attention of those naturalists who have an opportunity of examining specimens of the European species. The sacs to which I allude, two in number, lie under the skin of the abdomen, immediately in front of the anus, are of a pyriform shape, and each, by means of a narrow duct, opens into the longitudinal groove, which exists on the inner side of each anal appendage. In none of the sacs which I examined was I able to detect any fluid beyond what was barely sufficient to lubricate their inner surfaces, and from whence it proceeded I could not discover; no glandular structure was noticed. Farther enquiries, I have no doubt, will shew them to be essential to the proper performance of the functions belonging to the appendages; and as tending to give probability to that supposition, I may merely observe that by injecting water into one of these sacs, the corresponding appendage was distended to a great size, and its apex expanded, flattened, and rendered well adapted for fixing upon, or seizing extraneous bodies.



AGRIOPUS SPINIFER.

(Pisces_Plate 3)

AGRIOPUS SPINIFER.—Smith.

Pisces.—Plate III.

A. dorso, lateribusque supernè rubro-brunneis, maculis, nebulisve flavis marmoratis; lateribus infernè, abdomineque argenteo-griseis purpureo-tinctis; pinnâ dorsale maculis tribus nigris notatâ; pinnis pectoralibus, ventralibus, analeque flavo-maculatis; aculeo uno ante oculum, et tribus versus angulum oris.

Longitudo 12½ unc.

Colour.—The head, the back, and the sides, till some distance beneath the lateral line, rich reddish brown, marbled with brownish yellow spots or *nebulæ*, which are disposed in irregular longitudinal rows, and are smallest and most numerous towards the dorsal fin. The lower portions of the sides and the belly are dull silvery-grey, with a purple gloss; the line of demarcation between the reddish-brown and silvery-grey is very distinct and waved. Dorsal fin close to the back light brownish yellow, the remainder dull brown; on the anterior portion of the fin the lower edge of the latter colour appears somewhat scolloped, there being between every two rays an obtuse brown point almost reaching to the back. This fin besides is marked with several brownish black spots or stripes; three are distinct spots, the first is between the first and second ray, and occupies more than the superior half of the intermediate membrane; the second is between the sixth and seventh ray, and the third between the seventh and eighth; they are of a somewhat circular form and situated near to the upper margin of the fin: the stripes occupy the upper edge of the last third of the spinous portion and the whole of the same part of the soft portion of the fin. The pectoral, ventral, anal, and caudal fins are yellowish brown, and the rays of the three first are barred with brownish yellow.

Form, &c.—Typical. Figure rather more delicate than that of *Agriopus torvus*, nearly similar to that of *Agriopus verrucosus*, Bl.; the form of the head also approaches to that of the latter species, and differs from *A. torvus* in the snout being directed rather more horizontally. Mouth small; lips thick and fleshy; teeth long, slender, numerous, and closely set. The frontal

bone above and between the eyes and the temporal and infra-orbital bones, together with the peroperculum and the other osseous portions of the gill coverts, with the exception of the operculum, scabrous,—the roughness arising from their surfaces being ornamented with fine radii consisting of numerous minute granular points; operculum smooth. At the base of the snout in front of each eye, there is a short, strong, and pointed spine, and behind and rather above the angle of the mouth, three horny tubercles, the points of which are either simple, jagged, or serrated. The skin of the body is soft and armed with numerous minute and pointed spines, all of which are slightly directed backwards; the lateral line is groved and slightly curved, the convexity upwards. In the course of the line clusters of spines occur at intervals of three or four lines, those of each cluster arise from a common base, and some of them are directed forwards, and others backwards. Anterior half of spinous portion of dorsal fin high and much arched, posterior half low and nearly every where of equal height, the hinder or soft portion of the fin slightly arched above, and the highest point projecting considerably beyond the level of the posterior half of the spinous portion. Pectoral and ventral fins narrow in proportion to their length, and all the rays excepting the first of each, free at their extremities; hinder portion of anal fin much longer than anterior portion; caudal fin slightly forked. The number of rays in the fins are—dorsal 20—12; pectorals 9; ventrals 6; anal 9; caudal 16.

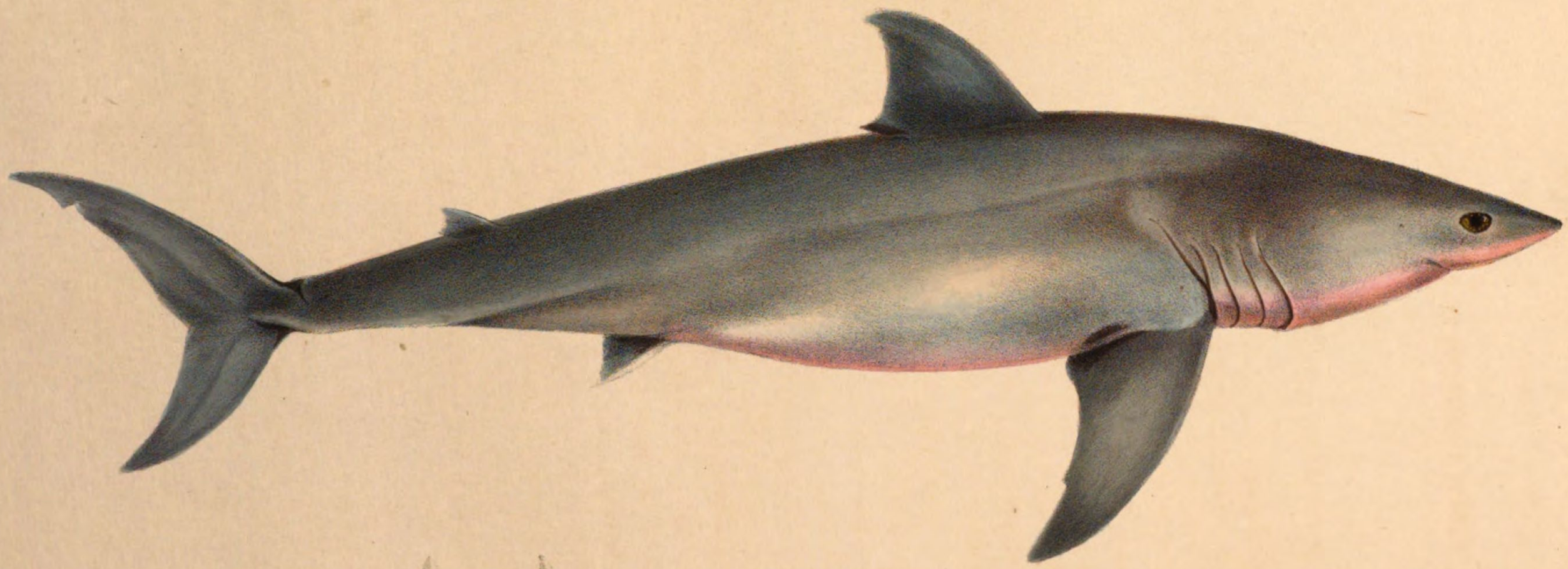
DIMENSIONS.

	Inches.	Lines.
Total length	12	6
Length of the dorsal fin	8	7
of the pectoral fin	2	10
of the ventral fins	2	9
of the anal fins	1	6
of the caudal fins	1	10
of the fifth or longest spine of the dorsal fin	2	2

	Inches.	Lines.
Height of the soft portion of the dorsal fin	1	1½
Depth of the anal fin	1	5
Depth of the body at the base of the pectoral fins	3	0
Depth at the base of caudal fin	1	0

In young specimens the colours are the same as in adults; in the former the spines of the body are more numerous.

The above are the dimensions of the largest specimens we have seen: and as many much smaller have been procured, we are disposed to believe that the individual here represented had attained its full size. Specimens are occasionally caught in Table Bay, but by no means so frequently as either *A. torvus* or *A. verrucosus*. It feeds upon shell fish, and its stomach is generally found gorged with small limpets, &c.



CARCHARODON CAPENSIS.

(Pisces_Plate 4)

CARCHARODON CAPENSIS.—Smith.*

Pisces.—Plate IV.—Female.

C. suprà obscurè cæsius, purpureo-tinctus; subtus flavo-albus plus minusve miniatus; pinnis pectoralibus suprà versus basin, corporisque lateribus post has nigris; oculis viridi-nigris, punctis subaureis variegatis.

Longitudo ex apice capite ad extremitatem pinnæ caudalis 7 ped.

Colour.—The back, the upper parts of the sides, and the dorsal fins dull blueish grey shaded with purple, and exhibiting a velvety lustre; the lower portions of the sides silvery blue. Under parts yellowish white, tinted with vermillion-red, very strongly on the under surfaces of the head, neck, and tail. The upper surface of the pectoral fins, and also the caudal and anal ones, purplish grey, excepting a portion of each of the first named, toward the base, which is livid black; the part of each side adjoining these marks is also black. The under surface of the pectoral fins reddish white. Eyes resplendent greenish black, variegated with bright copper-coloured points.

Form, &c.—Figure robust and fusiform; the tail immediately in front of caudal fin, very slender and strongly carinated on each side; back slightly keeled. Head broad posteriorly, pointed anteriorly, flat above, convex below, and when viewed as a whole exhibits something of a triangular form; a patch of minute cuticular pores on each side of upper jaw, and two similar ones on the top of the head between the eyes and the nose. Gape large and arched, one row of erect teeth in each jaw, the remainder recumbent; those of the upper jaw more than double the breadth of the lower ones. Nostrils narrow, transverse, and partially divided by a small cuticular lobule; post-ocular spiracles very small, and on the same lines with the eyes, branchial openings large, and in front of the pectoral fins; the latter large and somewhat triangular in shape, their hinder edge slightly concave with a small triangular

* Generic characters.—Figure fusiform; head subconical; nose pointed; teeth triangular, the base forming one of the sides, those of the upper jaw widest, lateral edges finely dentated; post-ocular openings small; branchial openings all in front of pectoral fins; back carinated; first dorsal fin immediately in front of the middle of the back; each side of the tail strongly carinated; a semilunar *fossa* in front of caudal fin, both above and below; caudal fin forked, the upper portion longest. Closely allied to *Lamna*.

process towards the point. First dorsal fin triangular, its apex recurved, and the hinder edge at its base prolonged to a slender point; second dorsal fin small and quadrangular; the upper lobe of the caudal fin considerably longer than the lower, with a small triangular process near its point; structure and configuration of the abdominal viscera nearly as in the *Carcharidæ*.

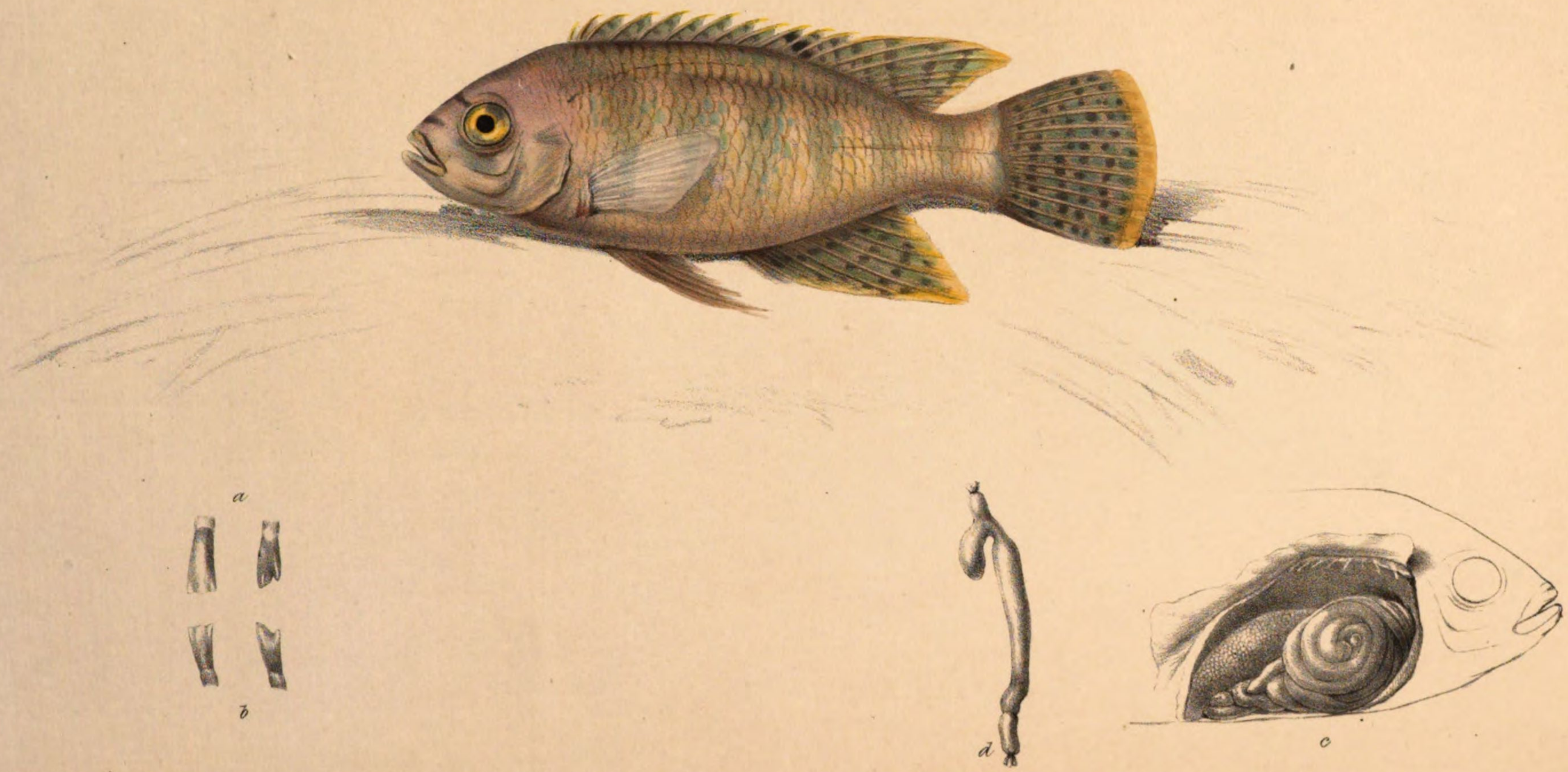
DIMENSIONS.

	Feet.	Inches.
Length from the point of the nose to the tip of the upper lobe of caudal fin	7	0
from the tip of the nose to the first dorsal fins	2	$6\frac{1}{2}$
Distance between the first and second dorsal fin	1	7
between the second dorsal and caudal fins	0	9
Length from the point of the nose to the pectoral fins	1	9
Distance between the pectoral and ventral fins	1	7
between the ventral and anal fins	0	$7\frac{1}{2}$
between the anal and caudal fins	0	7
Height of the first dorsal fin	0	8
Breadth at its base	0	9
Height of the second dorsal	0	2
Breadth at its base	0	$1\frac{1}{4}$
Length of the pectoral fins	1	5
Breadth at their base	0	9
Distance from the tip of the nose to the eye	0	$5\frac{1}{4}$
to the nostrils	0	$3\frac{1}{2}$
to the centre of the mouth	0	5
to the first branchial opening	1	6
Distance from the eye to the post-ocular spiracle	0	11
Circumference in front of the first dorsal fin	3	4

Nothing is known of the *male*.

We have only seen one specimen of this species of shark; but others were taken in the Cape Seas during our residence in South Africa. It swims close to the surface of the sea, and is said to be very active, and to feed upon fishes which it captures by its speed. The one we examined had the stomach distended with portions of *Acanthias australis*, Smith, *Callorynchus australis*, Cuv., and a species of *Loligo*.

In the Museum of the Zoological Society of London.



TILAPIA SPARRMANII.
(Pisces_Plate5)

TILAPIA SPARRMANII.—Smith.*

Pisces.—Plate V.

T. capite, corpore anticè, abdomineque subroseis, purpureo-tinctis; corpore posticè pallidè roseo-flavo, fasciis transversis viridibus, variegato; pinnis dorsali, anali, caudalique pallidè viridibus, maculis purpureis fascias irregulares formantibus notatis, marginibus flavis.

Longitudo, 4 unc. 6 lin.

Colour, &c.—The head, the body in front of the pectoral fins, and the belly, a delicate rosy red, variegated with slight tints of purple; the general colour of the other parts of the body intermediate between rose-red and cream-yellow. On the sides, six or seven vertical bars of a pale green colour, and between them some pale ultra marine spots, which vary in number in different specimens. The hinder margins of the scales, particularly of those towards the dorsal fin, edged with olive brown. The *striæ* forming the lateral line, are light greenish brown, and not readily seen in fresh specimens. Dorsal, anal, and caudal fins, pale grass green, the first margined superiorly, the second inferiorly, and the last posteriorly, with saffron-yellow, and all barred more or less regularly with oblique or vertical bands, composed of small subquadrangular spots of a dull purple colour, those of the tail being best defined, and almost disposed in vertical rows. In addition to the purple spots, the dorsal fin has also three blackish spots towards the hinder parts of its

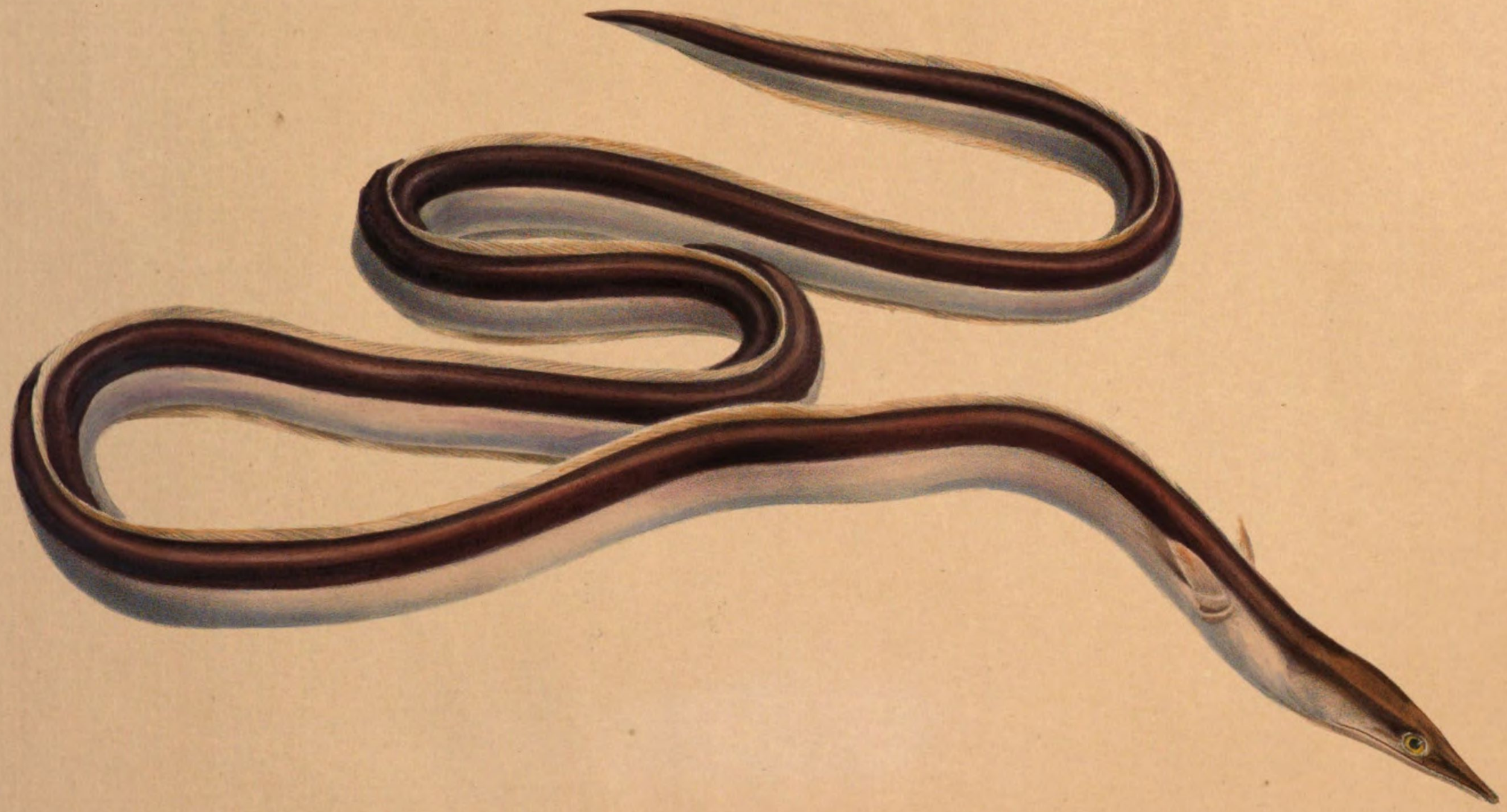
* *Generic characters of Tilapia.*—Form oblong, subovate, laterally compressed. *Head*, rather short, and tapering anteriorly; *mouth* small, and opening directly in front; *lips* pulpy and soft. *Teeth* short, slender, and rather widest at their points, which are either bifid or imperfectly trifid; those of the upper jaw disposed in three rows, all upon the intermaxillary bones; those of the lower in two; the teeth of the front row of each jaw largest and most regular; no *palatine* teeth. *Nostrils* small, single, and situated above and slightly in front of the eyes. *Eyes* moderately large. *Operculum* posteriorly, slightly waved; the covering of the *suborbitary* bones and the *preoperculum* perforated by several small pores. Two *rudimentary fossæ* on each side immediately above the upper extremity of the gills, with which they communicate. *Gill* rays five. Upper surface of the *head* anteriorly covered with smooth skin, rest of *head* and *body* coated with large semicircular scales. *Lateral line* interrupted, the anterior portion which commences at upper extremity of operculum, is much nearer to the back than the posterior portion, which runs along the middle of the body. *Dorsal fin* single, the hinder or soft rays longest. *Stomach* a *cul de sac;* no *cæca;* *intestines* of nearly equal calibre throughout, very long, slender and rolled upon themselves. *Ovaria* subcylindrical. For the form of the stomach, intestines, &c., see Plate:—*a*, two teeth of the upper jaw; *b*, two of the under jaw; *c*, viscera in situ; *d*, stomach.

spinous portion which are disposed in an oblique direction, so as to form a sort of slanting bar in front of the soft portion of the fin. Ventral fins, light brownish red; the pectoral ones, semitransparent and of an orange white colour, the tints of the sides distinctly visible through them. Lips, pale greenish yellow. Eyes, pale straw yellow, with one or more spots of dull purple.

Form, &c.—Subovate. The head, both superiorly and inferiorly, regularly tapered towards the nose; the line of the back slightly curved. Dorsal fin, anteriorly low, with its superior edge nearly level, posteriorly much higher, particularly from the commencement of the soft portion. The rays of the latter, particularly the middle ones, are much longer than those of the spinous portion, and their direction more oblique. The rays of the spinous portion project slightly above the connecting membrane, giving to the upper edge of the fin anteriorly a rather ragged or serrated appearance; and some of them are surmounted by delicate fleshy points, of a saffron colour. Posterior edge of dorsal fin oblique, the upper extremity prolonged towards the caudal fin. Anal fin, rather short, the spinous rays not so long as the soft ones; its hinder edge oblique, and nearly opposite to the corresponding portion of the dorsal fin. Caudal fin fan-shaped. Pectoral fins long, the superior rays longest, hence its posterior edge is oblique. Five small pores in a line upon the inferior and hinder edge of preoperculum. Scales large, hard, semicircular behind, and disposed in about ten longitudinal rows, from 23 to 27 scales in each. The number of rays in the fins are,

D.13—9. A. 3—9. C. 18. P. 11. V. 1—5.

The general appearances and organisation of this little fish have inclined us to refer it to the *Labyrinthiformes* of Cuvier, and as we have not been able to find any described form with characters similar to those it possesses, we have found it necessary to regard it as the type of a new division for which we propose the name of *Tilapia*. The *fossæ* or *caverns* connected with the gills are very indistinct, yet such traces of them exist, as appears to warrant our regarding *Tilapia* as a fish of an aberrant form. It occurs in small fresh-water streams to the north of the Orange River, and the specimens we obtained were all taken from pools in the beds of temporary streamlets. Knowing that the water found in such situations usually disappears during the dry season, we at once inferred that all the specimens we saw were doomed to death on the arrival of that period. On questioning the *natives* of the district as to the frequency of these fishes in such situations, and stating to them our belief that they must all die with the disappearance of the waters, they strongly opposed our conclusion, and maintained that on the drying up of the water the fishes buried themselves in the mud with which the bottoms of the pools were coated, and there remained until fresh rains filled the holes and induced them to leave their subterranean abodes; in these respects, added our informants, they resemble water tortoises.



LEPTORHYNCHUS CAPENSIS.
(Pisces_Plate 6.)

LEPTORHYNCHUS* CAPENSIS.—Smith.

Pisces.—Plate VI. (Male.)

L. gracilis, subcylindricus; capite, dorso lateribusque super lineam lateralem purpureo-brunneis sub lineam griseo-argenteo-lucentibus; pinnis flavo-albis; caudæ apice acuminato; dentibus anterioribus sparsis, majoribus leviter devaricatis recurvatis; narium tubulis rubro-flavis; oculis cupreo-flavo-viridibus.

Longitudo ab apice nasi ad caudæ extremitatem 2 ped. 6 unc.

Colour.—The upper and lateral parts of the head and body are purplish brown, the head tinted with yellow; the lower parts and the sides of the body, below the lateral line, greyish white, with a pearly lustre. Pectoral, dorsal, and anal fins pale yellowish white, clouded with a slight shade of an umber-tint. Eyes yellowish green, slightly bronzed; tubes of nostrils reddish-yellow.

Form, &c.—Body for the greater part of its length nearly of equal size, tapered towards the tail; the lateral line commences over the pectoral fin, and extends, in a faintly indicated groove, to the tail, nearly equidistant from the back and abdomen; towards the tail the line becomes faint and indistinct; under it a line of minute pores, not distinct at all parts of its course; a longitudinal line of three or four similar pores under each eye, and a vertical one of about the same number behind it. Eyes round, pupil circular; nasal tube distinctly projecting and circular; upper jaw contracted towards the apex, and before and behind the contraction there is a distinct lateral bulge. The anterior teeth of both jaws thinly set, slightly divergent and recurved; the two or three anterior teeth of the palatal row small and recurved, the next three in succession longer and rather widely apart from each other,

* *Leptorhynchi Ch. gen.* — Figure slender, fusiform, eel-shaped; sides slightly flattened. Head small, laterally compressed, above slightly convex; jaws nearly equal, much elongated, forming a long, slender, subcylindrical snout; upper jaw depressed towards the point and laterally enlarged. Three rows of teeth in the upper and two in the lower jaw, those at and near the point of each longest and slightly curved, the remainder short, slender, nearly straight, pointed, and closely set together; eyes large and rather nearer to the angle of the mouth than the tip of the snout; nostrils single, tubular and situated near to the lower edge of upper jaw, about half way between the eye and tip of snout; a few minute pores under and behind the eye—those under in a longitudinal line, those behind in a vertical one. One branchial opening on each side, vertical, semilunar and slightly in advance of the pectoral fins; commencement of dorsal fin some distance behind the pectoral fins, and like the anal, very slender and lying in a furrow; both these fins vanishing gradually towards the tip of the tail, the latter pointed and without fin. Lateral line distinct and formed by a series of raised, interrupted delicate *striæ*, below which is a line of minute pores.

the remainder short, nearly straight, and closely set. The lateral teeth with which the point of the upper jaw is armed are unequal in size, some at its very apex. In the lower jaw there are no teeth directly in front, the first of each side being a little behind the apex, it is the longest of the series, and distant from the next nearly one line; the second is smaller, yet larger than those which succeed, and which nearly resemble in form and arrangement those of the upper jaw.

The *gills* are fixed on cartilaginous rami, in which respect as well as in many others this fish differs from *Anguilla*, *Muræna*, *&c.* The *œsophagus* is strong, internally marked with many longitudinal *rugæ;* the coats of the stomach are thin, and the inner one when not distended, has also irregular rudimentary folds. The length of the stomach is not in the same proportion as in *muræna*, its lower termination being far in advance of the anus. The *intestinal canal* proceeds from near the cardiac orifice, and forms no convolutions; it is nearly of equal calibre throughout, and closely intersected towards the rectum by rudimentary transverse *septæ;* the *rectum* is open and unobstructed. The *liver* is short in proportion when compared with that of *Muræna*, but not very different from that of *Anguilla;* it is of an irregular oblong form and placed upon the upper extremity of the stomach immediately over the pyloric orifice. The *gall bladder* is small and situated on the side of the liver near its inferior extremity, and the gall duct enters the intestinal canal a little below the *pylorus*. The *spleen* is long, slender, and slightly three-sided.

DIMENSIONS.

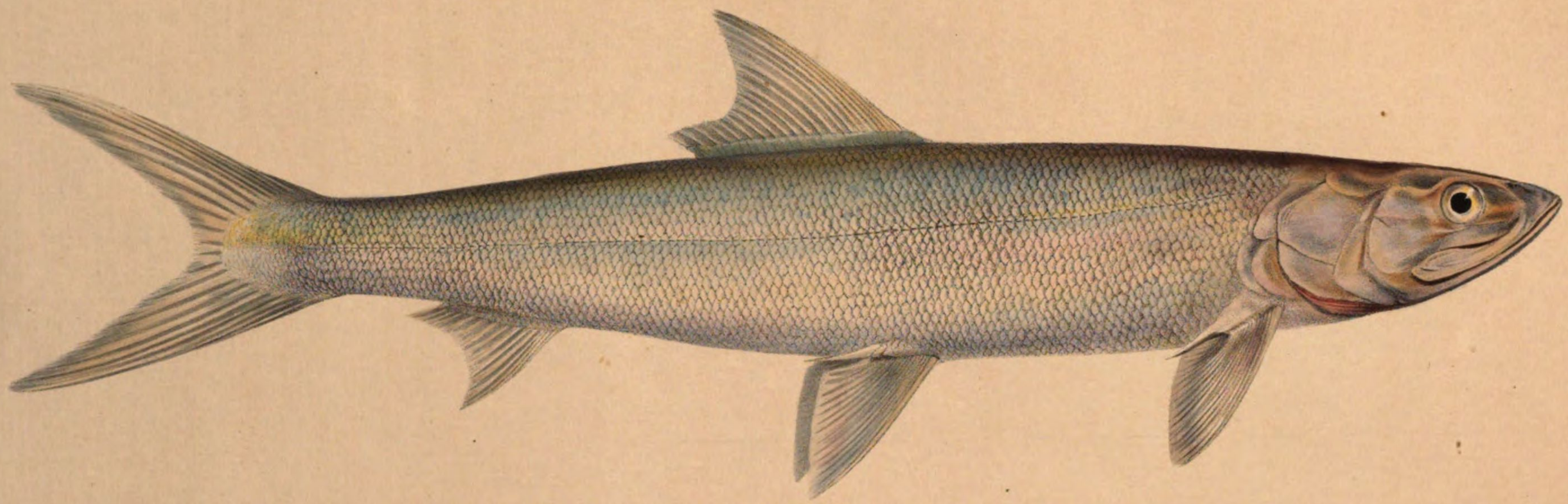
	Inches.	Lines.		Inches.	Lines.
Length from the tip of the snout to the point of tail	29	9	Distance from the eye to the angle of the mouth	0	3¼
of the gape from the angle of the mouth	0	11	from the tip of the nose to the anus.....	10	6
of the dorsal fin	26	9	from the tip of the snout to the branchial opening ...	2	0
of the anal fin	19	3			
Distance from the tip of the snout to the eye	0	4½			

The colours of the *female* are the same as those of the male.

From not having been able to class this fish in any of the groups already constituted, we have been forced to regard it as the type of a new form.

It is occasionally taken in nets in Table Bay, and I have only seen one individual exceeding the size of the specimen here described; it was about 9 feet in length, and, I have no doubt, of a different species.

The configuration of the snout of *L. Capensis*, and the arrangement of its teeth, particularly the former, present a striking resemblance to the corresponding parts of the common Gavial (*Crocodilus Gangeticus*).



ELOPS CAPENSIS.

(Pisces. Plate 7.)

ELOPS CAPENSIS.—Smith.

Pisces.—Plate VII.

E. capite supernè dorsoque subolivaceis; corporis lateribus supernè viridibus purpureo-tinctis; lateribus subtus partibusque inferioribus argenteo-albis; dorsali analique pinnis ad basin vaginatis; pinnis pectoralibus ventralibusque ad basin squamis membraneis marginatis, earumque posterioribus elongatis, et acuminatis.

Longitudo exempli descripti 26 unc.

Colour.—The centre of the back, and the upper surface of the head oil-green, with a brown tint; the remainder of the back and the sides superiorly verdigris-green, tinted with lilac-purple; the sides below the lateral line silvery-white, faintly clouded with pink, blue, and yellow variegations. The gill covers and sides of head a pale rose colour, variegated with pale purple, and light saffron-yellow tints. Fins light greenish white, with yellow and pink tints, the rays of the caudal and dorsal fins darkest. Eyes pale silvery white, clouded with greenish and yellowish variegations. The whole of the fish, with the exception of the fins, displays a strong mother-of-pearl lustre.

Form, &c.—Figure rather slender, and somewhat fusiform; sides slightly compressed; girth between hinder edge of gill covers and dorsal fin nearly the same; beyond these it gradually diminishes as the distance increases; the transverse diameter of the body, immediately before the dorsal fin, about two-thirds of the vertical diameter. Head without scales, and measuring from the tip of the lower jaw to the hinder edge of the gill covers, not quite one-fifth of the total length of the fish;* its profile cuneiform, the upper surface slightly declivous, and marked between the crown and nostrils, with a broad nearly lineal depression, the under surface strongly sloped upwards. Nostrils double, and situated nearly half way between the eyes and apex of upper jaw, both oval, the hinder one the largest. Eyes large and rounded. Maxillary bones subovate, and each forming nearly two-thirds of the length of the jaw; *rami* of under jaw strong, and received within the upper, excepting at the nose, where the lower jaw is rather the more advanced of the two. *Teeth* extremely delicate, short, and closely set; a narrow band (figs. A & B a a) on the margin of the jaws, two clusters (fig. A b & c) on each side of the palate, and one (fig. B C) which forms almost the entire of the upper surface of the tongue; the apex of the tongue in front of teeth thin and membranous. *Gill covers* large, and *branchial* openings capacious; *operculum* more than twice the size of suboperculum; *preoperculum* somewhat triangular; *branchial* membrane with thirty rays, more than half of them within the rami of the lower

* In a smaller specimen which I possess, the length of the head is considerably more than one-fifth of the whole length; in neither, however, are the measurements to be depended upon, as both specimens have been skinned and stuffed.

jaw. Body covered with moderately large scales, anteriorly and posteriorly slightly rounded, the sides truncate; the basal half of each scale distinctly marked with a series of delicate and raised *radii*, which diverge from its centre (*vide plate*); immediately before the dorsal fin the rows of scales are twenty-seven. The humeral plates three in number, very conspicuous, the upper one long, narrow, and reaching from the centre of the back to a little below the division between the operculum and subopercular, the other two between that and the pectoral fins both on the same level, and the one overlapped by the other, as is distinctly represented in the figure. The lateral line commences behind the upper extremity of the operculum, slopes slightly downwards till it arrives nearly opposite the middle of the dorsal fin, from thence it proceeds in a straight line till its termination, which is a little behind the centre of the caudal fin; the line, though interrupted, is very distinct, and consists of a series of short grooves, one near the hinder extremity of each of the scales of the row along which it extends, which row is generally the fourteenth or fifteenth reckoning, the centre row of the back as the first. Fins moderately large, the dorsal and anal ones emarginate posteriorly, and each surrounded at its base with a low membranous sheath, coated with large scales; the base of the pectoral fins superiorly guarded by a long tapering membranous plate, and inferiorly by a series of broad but comparatively short ones; the base of the ventral fins inferiorly and superiorly furnished with plates like the pectoral fins, the last plate of the series on the dorsal aspect of the fin narrow and considerably elongated. Caudal fin deeply forked, with distinct, spinous, rudimentary rays superiorly and inferiorly towards its base, which are flattened and closely applied to each other; the large bony scale at the base of the tail, superiorly and inferiorly, oval and slightly convex.

DIMENSIONS.

	Inches.	Lines.
Distance from the tip of the lower jaw to the eye	1	3
to the angle of the mouth	2	6
to the hinder edge of the operculum	5	0
to the base of the first ray of the pectoral fin	5	2
to the dorsal fin	11	2
to the ventral fins	11	1
Distance from the hinder edge of the dorsal fin to the base of the tail	6	9
from the ventral fins to the anal fin	6	1
Distance between the anal fin and the base of the caudal	2	6
Length of the caudal fin	4	5
Total length of the fish	26	0
Vertical diameter immediately before the dorsal fin	3	7

In young specimens the green colour above the lateral line is scarcely broken.

In considering this a new species, I have only admitted two species of the genus to have been described, viz. *Elops saurus*, Bloch, Plate 393; and *Jinagow*, Russell, Plate 179.

BAGRUS CAPENSIS.
(Pisces_Plate 8.)

BAGRUS CAPENSIS.—Smith.

Pisces.—Plate VIII.

B. capite suprà, dorso, corporisque lateribus anticé viridi-brunneis, his lineis cæruleis, flavis, et albis variegatis; corporis lateribus posticè et subter lineam lateralem anticè flavis, viridi brunneoque umbratis: capite subtus, partibusque inferioribus coloris carnei, purpureo-griseo-umbratis; oculis flavis.

Longitudo exempli descripti 20 unc.

Colour.—The upper surface of the head, and the back and sides anteriorly, above the lateral line, a rich dark greenish brown, the sides veined irregularly with bright blue, yellow and silvery-white lines. The sides posteriorly above the lateral line, and anteriorly below it, saffron-yellow clouded with grass-green and dull brown; the middle portion of the sides below the lateral line, and the sides of the head below the eyes, intermediate between straw and ochre-yellow, the tint variegated with shade of a purple and grey hue. The belly, under-surface of head, and sides of tail below the lateral line, together with the base of the anal and dorsal fins, and the greater part of the caudal fin, a livid flesh-colour, clouded with purplish grey; the ventral and anal fins dull ultra-marine blue at the points. The dorsal and pectoral fins dirty brownish-green, clouded with blue, the last colour brightest on the pectorals; the first or anteriormost spine of pectorals flesh-coloured. The sides of the head, behind the eyes, and the gill-covers, confusedly clouded with dark greenish brown, purplish blue, lilac-purple and greenish white tints. The barbels livid reddish brown, lightest at the points. Eyes golden yellow; pupils black. The whole of the colours of the head and body heightened by the presence of a strong bronze-lustre.

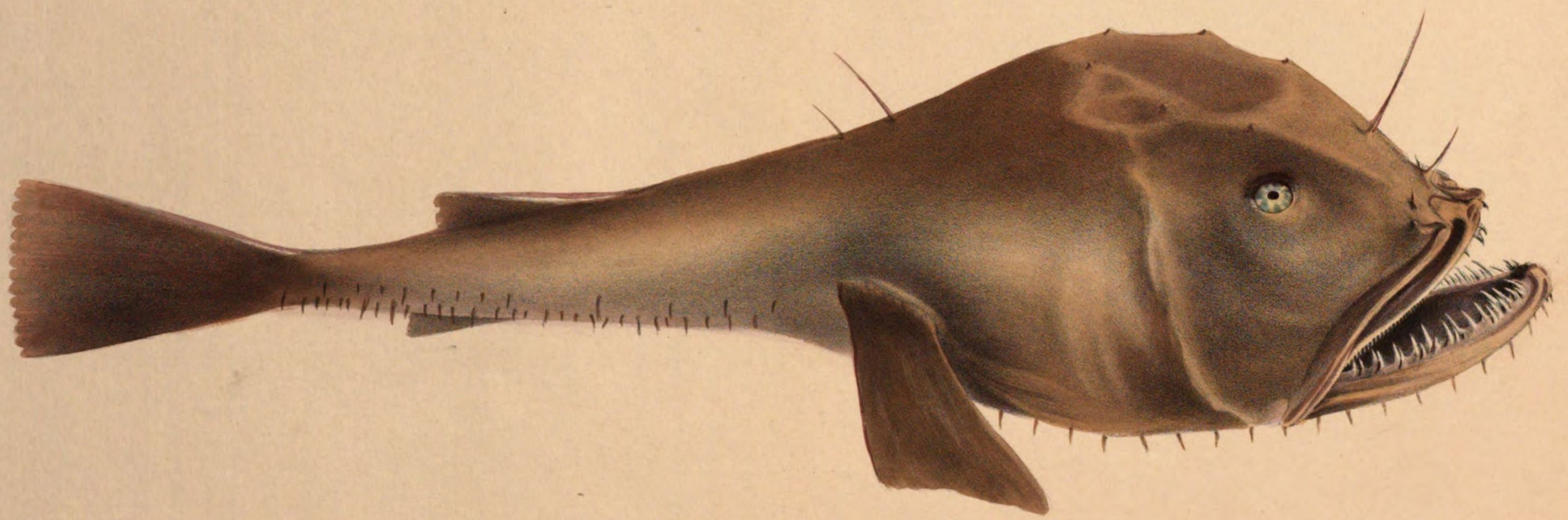
Form, &c.—Figure rather clumsy. The body in front of the ventral fins somewhat triangular; the belly large and protuberant; behind the pectoral fins, subcylindrical and tapered, a decrease of thickness very distinct behind the second dorsal fin. Head as broad as the body, and depressed, its upper surface nearly flat, inclined towards the mouth, and marked along its centre by a broad longitudinal furrow, which is widest about the middle, and by two somewhat triangular hollows, one on each side behind the nostrils,—these depressions are very distinctly seen in prepared specimens. The bones of the upper surface of the head slightly scabrous from the great number of elevated delicate *striæ* with which they are ornamented, and which, like the depressions, are most distinctly seen in dried specimens. Gape nearly the breadth of the anterior part of the head; upper lip slightly fleshy, with a long barbel at each extremity, immediately in advance of the angle of the

mouth; teeth short, slender, hair-like, closely set, and so numerous as to constitute a belt of considerable width on the inner edge of each jaw, those of the lower jaw rather thickest. Nostrils rather large, subovate, two on each side, and situated between the eyes, and the edge of the upper jaw, nearest to the latter; chin with four barbels, shorter and more slender than those at the extremities of the upper lip; the latter when extended reach to the base of the pectoral fins. Operculum smooth, somewhat triangular, the superior and anterior portion constituting the apex; suboperculum triangular, its superior side deeply emarginate; humeral bone immediately above the base of pectoral fin, large triangular, and finely marked with elevated longitudinal *striæ*. The skin of the head and the body smooth. The lateral line anteriorly rather above the level of the upper extremity of the branchial opening, and not distinctly visible till nearly under the first ray of the anterior dorsal fin; it consists of a series of slightly elevated and interrupted tubes, each of which opens posteriorly; from its origin its course is slightly sloping until it reaches a point over the commencement of the anal fin, after that it is horizontal to its termination, which is a little in advance of the central portion of the caudal fin. Dorsal fin high anteriorly, comparatively low behind, the first ray spinous, very strong, and armed anteriorly with a narrow ridge of serratures pointing downwards; pectoral fins of moderate size, the first ray of each like that of the dorsal, the serratures which arm its anterior edge point towards its base: the second dorsal fin small, adipose, superiorly slightly curved, and posteriorly nearly vertical: anal fin very large, the anterior rays much larger than the hinder ones: caudal fin deeply forked, the upper portion considerably more produced than the lower. The hinder edges of the anal and second dorsal are nearly opposite each other.

DIMENSIONS.

	Inch.	Lin.
Length from the point of the upper jaw		
to the first dorsal fin..	3	4
to the pectoral fin	3	10
to the second dorsal fin	12	6
Distance between the pectoral and ventral fins	4	5
between the ventral and anal fins	2	7½
between the second dorsal fin and the caudal fin	1	9
Distance between the anal and caudal fins	1	11
Length of the upper lobe of the caudal fin	4	7½
of the lower lobe of ditto	4	0
Width of the mouth at the angles.....	2	6
Length of the first spine of the first dorsal fin	2	6
of the pectoral fin	2	9
Total length of the fish described	20	0

The difficulty of describing the fishes of this genus in such terms as to enable naturalists to recognise the known species which may come into their possession is so great, that it is quite possible the one we have now considered as new, may have already been indicated; if it proves so, the name now given it will only require to be rejected.



LOPHIUS UPSICEPHALUS.
(Pisces_Plate 9.)

LOPHIUS UPSICEPHALUS.—Smith.

Pisces.—Plate IX.

L. suprà pallidè flavo-brunneus; subtus purpureo-griseus flavo-brunneo-tinctus; oculis lucidè viridi-albis. Longitudo ad apicem pinnæ caudalis, 28½ unc.

Colour.—The upper and lateral parts of the head, together with the back and sides of the body and the fins yellowish brown; the sides of the head posteriorly and the sides of the body lightest; the under surface of the head, body, and pectoral fins pearl-grey, tinted with yellowish brown. The filaments disposed upon the sides of the body and edges of the lower jaws, dark yellowish brown; the spinous tentacula on the head and anterior part of the back, light yellowish brown. Eyes greenish white, with a metallic lustre. Teeth amber-coloured.

Form, &c.—Head very bulky as compared with the body, and posteriorly nearly as high as broad; the outline, when viewed from above, is somewhat oval, and broadest behind. The upper surface of the head is much narrower than the under surface; nearly flat and slopes gradually from the vertex to the muzzle; the sides are subvertical, or slightly convex, and diverge as they descend. The lateral boundaries of the upper surface of the head is distinctly defined by the angle which is formed by the junction of the upper surface and the sides, and posteriorly each of these lines of demarcation are armed with three short obtuse spines; the foremost one is situated nearly over the eye, the second about two inches behind it, and the third at the hinder part of the *vertex*, considerably nearer to the centre of the head than the middle one, and not very distant from its fellow of the opposite side. The relative positions of these spines are well represented in the Plate. In addition to these there are two other spines of rather a stronger description; but, like them, short and obtuse, one immediately behind the anterior and superior extremity of each maxillary bone, and rather below the line which marks the upper surface of the head (vide Plate). The gape is moderately large, but not very broad; the opening of the mouth is directed obliquely upwards and forwards; and the lower jaw projects considerably beyond the upper. The symphisis of the lower jaw is narrow, the *rami* are arched and gradually curved upwards, and the jaw, when viewed as a whole, has a triangular form, the symphisis constituting the apex. The intermaxillary bones form the anterior edges of the upper jaw, and support the majority of the teeth with which

it is armed; they are separated from each other superiorly by a broad and deep furrow, widest in front. The teeth of both jaws are numerous, and those of the lower jaw, generally, larger than those of the upper. Towards the anterior extremity of each intermaxillary bone they are arranged in two or three rows; those of the hinder row, which are much the largest, are cylindrical, slightly curved, and directed backwards; the others, which are of the same form, and have the same kind of curve, are much weaker and shorter; the anterior margin of the lower two-thirds of each bone is armed with a series of short, delicate, cylindrical teeth, each slightly incurvated, and placed at regular distances the one from the other. Besides the teeth on the intermaxillaries, there are a few others situated on the outer edges of the palatal bones, and also two or three in a cluster at each angle of the *vomer* anteriorly. The palatal teeth are disposed in a row, and the two or three, near the anterior extremity of each row are longest. The teeth of the lower jaw are moderately slender, cylindrical, closely set, nearly straight, and very unequal in regard to length, some measuring an inch, others not more than a quarter of an inch. The eyes are large, directed outwards, and situated about half an inch below the outline of the upper surface of the head, nearly directly over the angle of the mouth; the pupils are almost circular. The branchial openings are rather narrow, and situated in the *axillæ* of the pectoral fins; the latter are rather broader at the extremity than the base, and the former is somewhat truncated. The body is subcylindrical. The dorsal and anal fins are small; the hinder edge of each is square, and the former is situated rather in advance of the latter. The caudal fin is somewhat fawn-shaped, and its posterior edge is truncated; all the fins are soft and fleshy. The sides of the body, close to the belly, and the edges of the lower jaw, are fringed with flat and short dentated filaments, varying from a quarter of an inch to an inch in length; they are irregularly scattered on the side but disposed in a single row on the jaw. On the anterior and upper surface of the head, in the course of the mesial line, there are two long, slender, spinous *tentacula;* the hinder one, which is a little in front of the eyes, the longest; two others, of a like description on the beginning of the back, immediately over the pectoral fins, the anterior one the longest. Length of the head 11 inches, of the body, exclusive of the caudal fin 13 inches; greatest width of head about 3 inches behind the eyes $8\frac{1}{2}$ inches; height at hind head 6 inches. Length of the pectoral fins $3\frac{3}{4}$ inches; of the dorsal 4 inches; of the anal 3 inches; of the caudal $4\frac{1}{2}$ inches. Rays of the pectoral fins 16; of the dorsal 7 or 8; of the anal 7; of the caudal 12s.

Inhabits the seas of the Cape of Good Hope.

Fig. 1

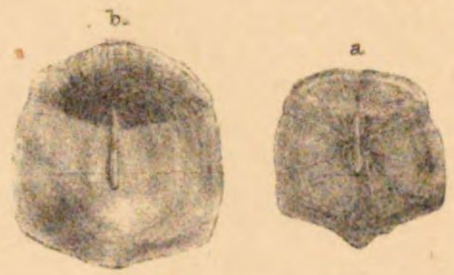


Fig. 2.

Fig 1, BARBUS CAPENSIS._Fig. 2. BARBUS MAREQUENSIS.

(Pisces_Plate 10.)

BARBUS (CHEILOBARBUS*) CAPENSIS.—Smith.

Pisces.—Plate X. Fig. 1.

B. capite superne dorsoque antice olivaceo-brunneis; dorso postice lateribusque suprà lineam lateralem flavo viridibus; capitis lateribus corporisque partibus infrà lineam pallidè flavis; squamis postice olivaceo-brunneis marginatis; labiis, cirrisque carneis; oculis flavis; squamis magnis; cirris quatuor duobus e labio superiore et uno ab angulo oris utroque dependentibus; lineâ laterali subdeflexâ.

Longitudo ad extremitatem pinnæ caudalis, 16 unc. 6 lin.

Colour.—The upper parts of the head and the anterior part of the back a tint intermediate between oil-green and deep orange-coloured brown (olive-brown); the hinder portion of the back intermediate between oil-green and grass-green, the latter colour predominating towards the back. The sides of the head and of the body below the lateral line light gamboge-yellow tinted with oil-green; all the scales both above and below the line edged with a tint of the colour of the back, darkest on those above the line. Lips and cirri a dull flesh-colour. Fins pale sienna-yellow shaded with dull yellowish brown, the rays lightest. Eyes kings-yellow shaded with reddish-brown.

Form, &c.—Head elongated, above rather flattened, snout prominent and somewhat pulpy; mouth opening directly forwards; gape of moderate extent; lips full and rather hard; cirri nearly an inch in length, two on snout, one directly in front of each eye, the other two behind the angles of the mouth. Operculum subquadrangular, the inferio-anterior angle prolonged, the superio-anterior oblique, the hinder side the longest; the subopercular the segment of a circle; the interoperculum triangular, its apex rounded. Dorsal outline, between hind-head and posterior edge of dorsal fin slightly arched, behind dorsal fin nearly straight; abdominal outline from branchial rays to hinder edge of anal fin slightly arched, behind the latter nearly straight. Lateral line anteriorly slightly deflexed, from over base of

* *Ch. Subgen.* Cheilobarbi.—Mouth opening forwards; lips full, and firm; intermaxillary bones slightly extensible; nostrils double; four cirri, two from snout, and one from each angle of mouth; lateral line consisting of a series of small tubes; scales large; dorsal fin short, and commencing slightly in front of base of ventral fins; commencement of anal fin about midway between ventral and caudal fins.

ventral fins to caudal fin nearly straight. Scales large and irregularly five-sided, the posterior side or apex of each scale semicircular and submembranous; the point of junction between the basal sides prominent and rounded, the two lateral, or the superior and inferior sides of each scale, nearly straight; each scale towards hinder edge marked with fine closely set longitudinal striæ. The dorsal fin is somewhat quadrangular, its anterio-superior angle elongated. Pectoral fins ovate; hinder edge of ventral fins oblique; anal fin subquadrangular, the inferio-anterior angle elongated and blunt. Caudal fin deeply forked. Size of four grown specimens vary from fourteen to eighteen inches.

Fin rays.....D. 10. P. 16. V. 8. A. 7. C. 19.

The only specimens which I have seen of this fish were taken in the rivers of the western coast of South Africa, more particularly the Breede and Oliphants rivers. It is principally found in deep pools, where the current is weak, and where the bottom is soft and muddy. It is frequently taken in nets, and also occasionally by hooks. It is a rich fish, and abounds with oil; hence it is not much relished by persons with delicate stomachs.

BARBUS (CHEILOBARBUS) MAREQUENSIS.—Smith.

Pisces.—Plate X. Fig. 2.

B. capite suprà castaneo, aurantio-tincto; dorso lateribusque brunneo-flavis, priore olivaceo-brunneo-obscurato; lateribus infrà lineam lateralem, abdomineque flavis griseo-flavo-umbratis; cirris carneis; oculis flavis.

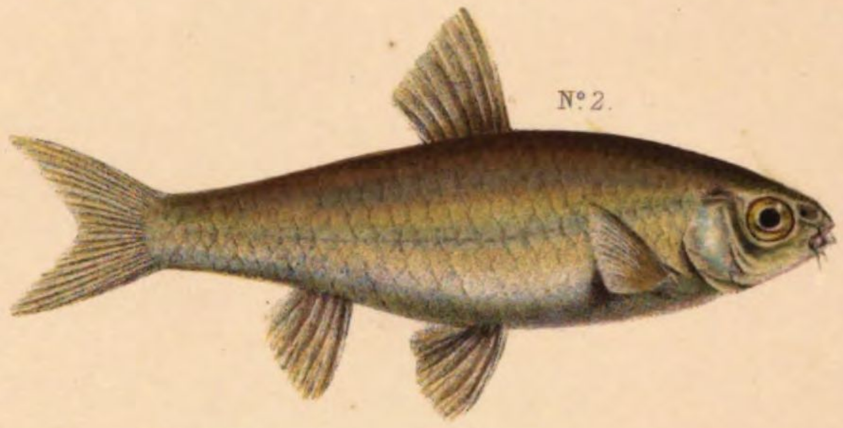
Longitudo ab nasi apice ad extremitatem pinnæ caudalis, 15 unc.

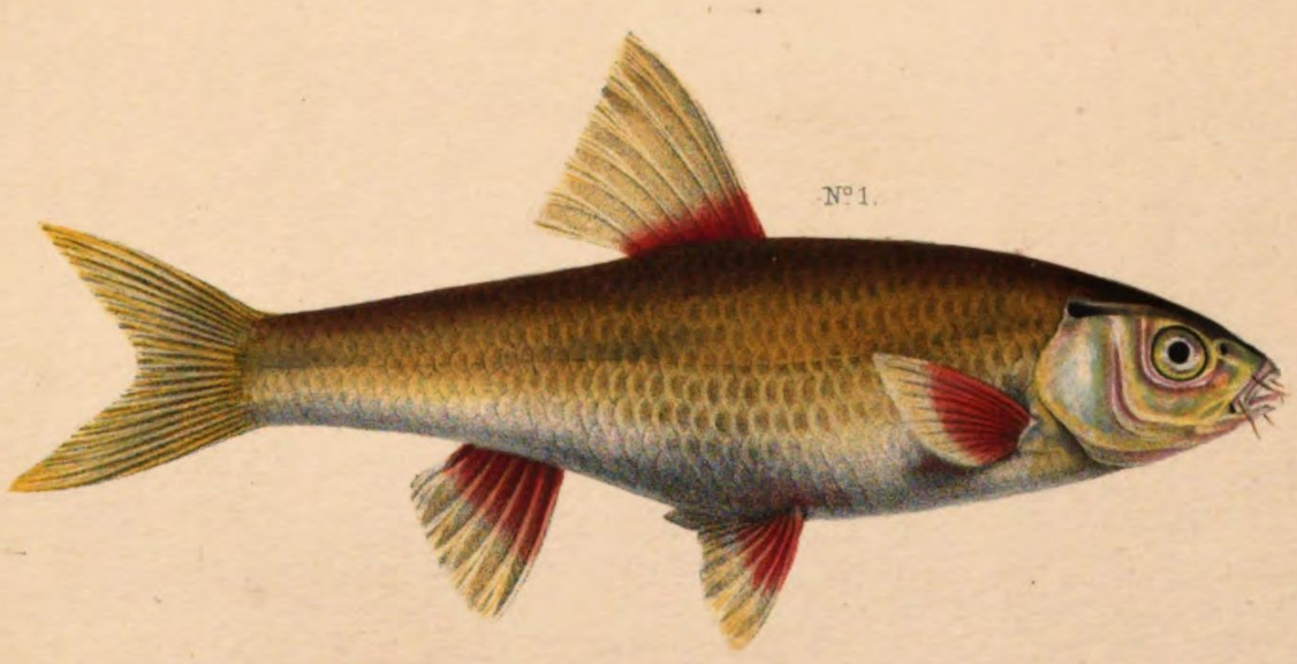
Colour.—The upper parts of the head chesnut-brown, brightened with a shade of reddish orange; back and sides above the lateral line honey-yellow, obscured and deepened on the back with olive-brown; below the lateral line gamboge-yellow, obscured with a faint tinge of saffron-yellow. The sides of the head primrose-yellow, freely shaded with light lemon-yellow and pale aurora-red. Lips and cirri light flesh-red. Pectoral and caudal fins light strawy-ellow, shaded with dull wood-brown, the other fins intermediate between flesh-red and sienna-yellow, and shaded with light olive-brown, the rays in all the fins lightest. Eyes lemon-yellow, shaded with reddish brown.

Form, &c.—Figure subovate and elongated; the dorsal outline rather more curved than the abdominal, the curvature strongest between nose and hinder edge of base of dorsal fin, behind that the line is straight and slightly oblique, the abdominal curve terminates at hinder edge of anal fin. Head short and somewhat wedge-shaped, the transverse edge of the snout forming the thin edge of the wedge; nostrils close to anterior and upper edge of orbit, the openings placed obliquely, the one in front of the other, the hindermost largest; intermaxillary lips full and pulpy; cirri about five lines in length; operculum large; suboperculum suboval; interoperculum semilunar; humeral plate large, rounded posteriorly, and prolonged backwards beyond base of pectoral fin. Lateral line towards the head slightly deflexed, nearly straight from opposite commencement of anal fin, it consists of a series of interrupted tubes, one on each scale. Scales very large, irregularly five-sided, the hinder side semi-

lunar, and constituting the apex of scale, in front of the membraneous edging of this side, the outer surface for a short space forewards is rough from the presence of a number of fine closely-set striæ. Dorsal fin four-sided, the base being reckoned one side, the superio-anterior angle prolonged and rounded; the anal fin large, prolonged, and situated considerably nearer to the caudal than to the pectoral fins; caudal fin deeply forked.

Inhabits the rivers of the interior of Southern Africa, and is found in deep pools, particularly where the water is in a measure stagnant, and the basin or bed in which it is contained soft and muddy. In such places the fish is taken with a hook baited with flesh. It is considered by persons fond of oily fish as good food.





N°1, BARBUS BURCHELLI.—N°2, BARBUS PALLIDUS.

(Pisces Plate 11.)

BARBUS (PSEUDOBARBUS*) BURCHELLI.—SMITH.

PISCES.—PLATE XI. No. 1.

B. suprà olivaceo-brunneus; lateribus subcupreis; partibus inferioribus argenteo-albis; pinnis pectoralibus, ventralibus, analique ad basin coccineis; cirris quatuor; lineâ laterali deflexâ.

Longitudo ab apice nasi ad extremitatem pinnæ caudalis, 4 unc.

ROOYE VLERK CARPER of the Cape colonists.

COLOUR, &c.—Back olive brown, with a metallic lustre; sides between coppery and golden yellow, finely freckled with minute liver-brown dots; belly and under parts silvery white. The fins pale yellow, the base of the pectorals, ventrals, and anal scarlet red. Eyes whitish yellow.

FORM, &c.—Figure subovate, prolonged; dorsal outline slightly arched, abdominal outline anteriorly more curved than the dorsal, posteriorly, like dorsal, nearly straight. Head not quite one-fourth of the length of the fish, its depth four-fifths of its length, the upper surface slightly arched; gape moderate; lips very thin; cirri four, two from the snout, and one from each angle of the mouth, nostrils situated close to the upper and anterior edge of orbits, the posterior opening the largest; sub-operculum rather broad, interoperculum triangular, the apex, which points backwards and downwards semicircular; humeral plate triangular. The lateral line is slightly deflexed, and consists of a series of slender horizontal tubes, one to each scale. Scales rather small, those towards abdomen largest, the posterior edge of each semicircular, and its external surface towards hinder margin rough from being marked with a number of fine, close-set, and radiating striæ. The dorsal fin is situated nearly midway between the snout and base of caudal fin, its base anteriorly directly over base of pectoral fins. The first and second rays of the dorsal and anal fins slender and hard, the

* *Ch. subgen. Pseudobarbi.*—Mouth opening forwards; lips thin and cartilagenous; intermaxillary bones extensible; nostrils double; four cirri, two from upper lip and one from each angle of mouth; lateral line consists of a series of slender tubes; dorsal fin short and commencing nearly directly over base of ventral fins; intestinal canal long and contorted.

rest soft and divided, the first ray of each very short and closely applied to the second. The anal fin about half way between pectoral and caudal fins; the caudal fin bifid.

B. rays, D 8. P. 12. V. 6. A. 7. C. 19.

Inhabits various rivers of the Cape colony, and is generally found in pools whose current is weak. Many individuals are generally associated together, and they take a baited hook after the same manner as the minnow (*Leuciscus phoxinus*) of Europe.

BARBUS (PSEUDOBARBUS) PALLIDUS.—Smith.

Pisces.—Plate XI. No. 2.

B. suprà viridi-brunneus aureo-tinctus; lateribus partibusque inferioribus flavis ultimis dilutioribus cirris quatuor brevibus; lineâ laterali versus operculum obliquâ, postice rectâ.

Longitudo ab apice nasi ad extremitatem pinnæ caudalis, 2 unc. 9 lin.

Colour.—The back greenish brown with a golden gloss; the sides and belly gilded yellow, the former darkest. In some specimens there is simply a golden yellow line along the sides, and the parts below are greenish white. Fins pale greenish yellow. Eyes white with a yellow tint.

Form, &c.—Figure subfusiform or ovate and prolonged; the dorsal outline slightly arched, anteriorly near caudal fin straight; abdominal outline anteriorly more strongly arched, from base of anal fin posteriorly nearly straight. Head short, nearly as deep as long, strongly arched above; mouth directly in front; gape small, cirri four, two to upper lip, and one to each corner of mouth; lips thin; nostrils close to upper and anterior edge of orbit; suboperculum rather broad, interoperculum triangular, its apex rounded, humeral plate triangular. Lateral line commences near upper extremity of operculum, its course at first slightly oblique, then in a straight line to middle of base of caudal fin, where it terminates. Scales large for the size of the fish, hinder edge semicircular, the outer surface towards hinder edge rough from several delicate raised striæ, more or less radiate. Dorsal fin small, its commencement rather nearer to the top of the head than to the base of caudal fin, and slightly in front of the base of ventral fins, the first ray slender and hard, the rest soft; anal fin about midway between ventral and caudal fins, the latter bifurcate.

Fin rays, D. 7. P. 14. V. 6. A. 7. C. 17.

This little fish inhabits clear streams in various parts of the Cape colony, and in its habits closely resembles the minnow (*Leuciscus phoxinus*) of Europe. Numerous individuals are seen together, and specimens are easily obtained by means of a baited hook.

Until the *Cyprinidæ* shall have been subjected to a most searching examination by a person possessed of a minute knowledge of a great number of species, the family will exist as one whose

groupes must be acknowledged to be but very imperfectly known, and badly established. Of the various families into which fishes have been distributed, there does not appear to me a second family in which the characters assumed as those of groupes are more vague, or even so vague and imperfect as those which have been selected to characterize the lower divisions of the *Cyprinidæ;* and I cannot, without hesitation, say that I believe I have not myself, even in this Number of my Illustrations, contributed to increase the obscurity and confusion. Be that, however, as it may, I feel convinced that it is not to the individual who possesses only a very limited number of species that the Ichthyologist is to look for improvement and reform: his expectations must be turned towards men who have the opportunity of examining and comparing large collections of species; and it is from them that he must expect light as to the proper classification.

With respect to the three subordinate forms which I have ventured to characterize, and of which figures are given in Plates X. XI. and XII., I feel fully satisfied only of the legitimate claims of one *Abrostomus;* the other two may eventually be referred to some other of the groupes already instituted, though I confess my own inability to discover in the combined characters of any of such groupes the essentials which would justify me in selecting for the South African species positions different from that in which I have placed them. When some hundreds of species shall have been got together, the difficulties which are now experienced will doubtless be readily surmounted, and it will then be seen whether *Cheilobarbus* and *Pseudobarbus* are to be retained as component forms of the genus *Barbus*, or are to be translated to some other genera. At present I regard both of them as forming minor divisions of the genus *Barbus*, and in my opinion are to be regarded as two of its subgenera.

Fig. 1.

a

b

c

Fig. 2.

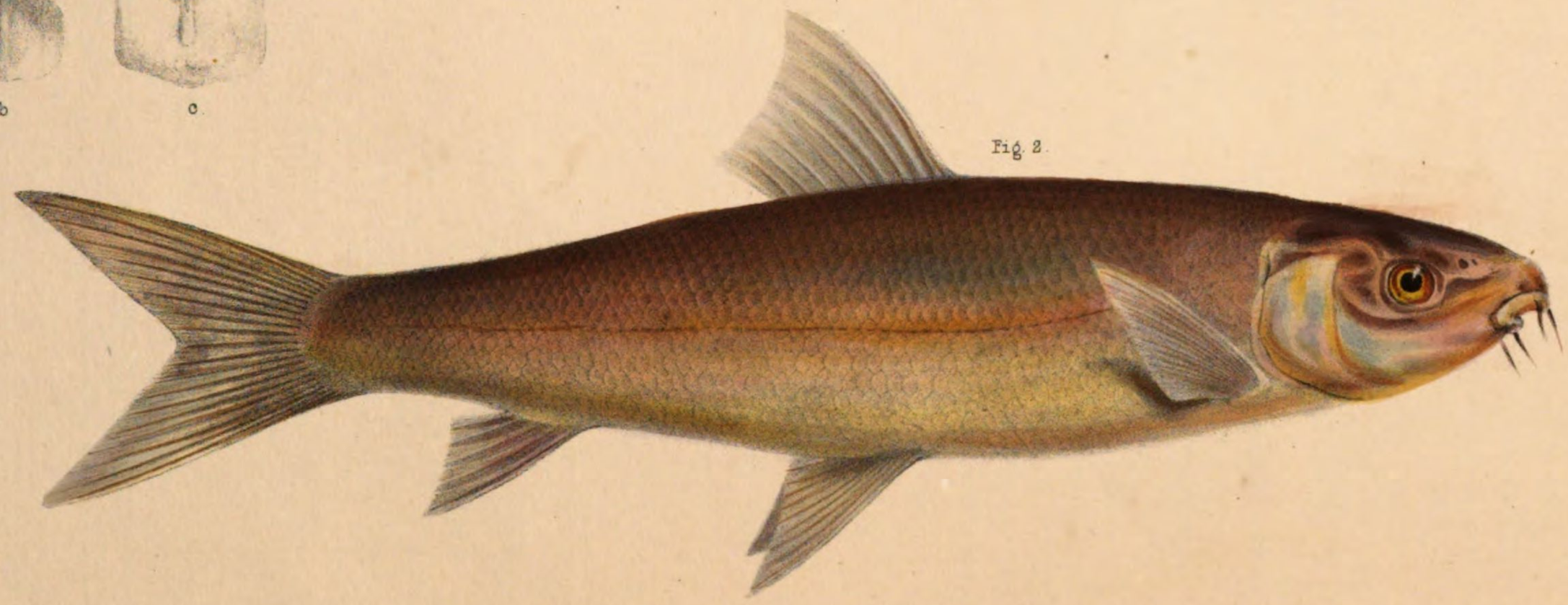


Fig 1. ABROSTOMUS UMBRATUS. — Fig. 2, ABROSTOMUS CAPENSIS.

(Pisces_Plate 12.)

ABROSTOMUS UMBRATUS.*—Smith.

Pisces.—Plate XII.—No. 1.

A. suprà viridi-purpureus; lateribus pallide cinereo-purpureis, maculis flavis variegatis; partibus inferioribus lactifloribus; pinnis dorsali caudalique flavo-maculatis; labiis carnosis; ore infrà spectante sub apice nasi posito; cirris quatuor.

Longitudo ad apicem pinnæ caudalis, 8 unc. 4 lin.

Colour.—The upper surface of the head, the centre of the back and the upper parts of the sides, towards the head, a tint intermediate between reddish orange and brownish red (a sort of greenish purple) the remaining portion of the sides above the lateral line a pale brownish purple-red, heightened with a tint of reddish orange. Below the lateral line the ground colour is a pale, dull pearl-grey, clouded here and there, particularly towards the head, with pale crimson-red. In addition to the colours described the back and sides are mottled with blotches or spots of gallstone-yellow; above the lateral line these mottlings are very numerous and generally in the form of irregular, oblong, vertical blotches, below the line they are smaller, rather scanty, and somewhat circular. The sides are also variegated with several small clusters of minute dots of a chocolate-red colour. The belly and under parts are a dull cream-yellow. The sides of the head in front of the gill-covers variegated with pearl grey, yellow of various tints, and pale brownish red; gill-covers lilac-purple clouded with dull azure-blue and gallstone yellow. Lips and cirri pale flesh-red tinted with lilac-purple. Dorsal and caudal fins flesh-red, strongly tinted towards the base with brownish purple-red, and spotted with gallstone-yellow, the rays lightest,—the dorsal fin besides is crossed about midway between its base and apex by an obscure azure-blue bar. The pectoral, ventral, and anal fins pearl-grey, shaded with

* *Char. Subgen. Abrostomi.*—Figure oblong-ovate; head broad posteriorly; snout pulpy, somewhat depressed, and its anterior outline semicircular; mouth situated under the snout, small, transverse and directed downwards; lips full and pulpy, the lower one with a membranous fold internally like a second lip; four cirri, two dependent from upper lip, one of them at each side of snout, and one from each angle of mouth; nostrils double. Branchial rays three; lateral line deflexed, slightly interrupted and consisting of a series of short tubes; dorsal fin about midway between snout and caudal fin; scales small or of moderate size; intestinal canal very long, slender, and rolled on itself.

brownish purple-red, and tinted with bright lemon-yellow. Eyes deep gall-stone-yellow shaded with brownish orange, a narrow ring around the pupil light gamboge-yellow.

Form, &c.—Figure subovate and prolonged; the dorsal and abdominal outlines slightly arched, the outlines near to caudal fin almost straight. Head slightly arched superiorly and rather depressed; snout prominent, pulpy, and consists of the covering of the maxillary bones; mouth transverse; gape moderate; lips tumid and pulpy, as represented in Plate XII. fig. *a*; nostrils about a line and a half in front of superior and anterior edge of orbits, the hindermost opening the largest; cirri four, about 4 lines in length, two of them pendant from the front of the snout, and two from the angles of the mouth. Eyes moderate; suboperculum narrow; interoperculum small, and semilunar behind. Lateral line nearly straight, and extends from the middle of the scapular plate to the base of the caudal fin; scales of several sizes, and varied as to shape; on some parts the exposed portion of the scales is six-sided, in some four-sided, and in others subovate; they are generally very small, considering the size of the fish, those on the under parts are much the smallest; the scales, along which the lateral line extends, are irregularly five-sided, (vide Plate XII. fig. *b*,) and towards their tips finely and closely striated. Dorsal fin rather large, its base anteriorly nearer to the snout than to the base of caudal fin; the base of the pectoral fins directly under the middle of dorsal fin; the anterior edge of base of anal fin about midway between pectoral and caudal fins; the first and second rays of dorsal and anal, and the first ray of the ventral fins, hard, the rest soft and divided. Caudal fin deeply forked.

Fin rays, D. 10. P. 12. V. 10. A. 6. C. 21.

This fish is found in slow running streams to the North of Orange River, and generally in pools with a considerable depth of water and whose bottom is thickly coated with mud. It never takes a bait; therefore specimens are only secured by dragging with nets in such rivers. It is not regarded by the natives as eatable.

ABROSTOMUS CAPENSIS.—SMITH.

PISCES.—PLATE XII.—No. 2.

A. capite suprà dorsoque purpureo-brunneis; lateribus eisdem sed pallidioribus griseo-nebulatis; lateribus, infrà lineam lateralem, pallide flavis punctis brunneis variegatis; capitis lateribus, labiis, cirrisque flavis purpureo-tinctis; pinnis subflavis plus minusve griseo-umbratis; oculis flavis brunneo-aurantio-umbratis.

Longitudo ab nasi apice ad extremitatem pinnæ caudalis, 9 unc.

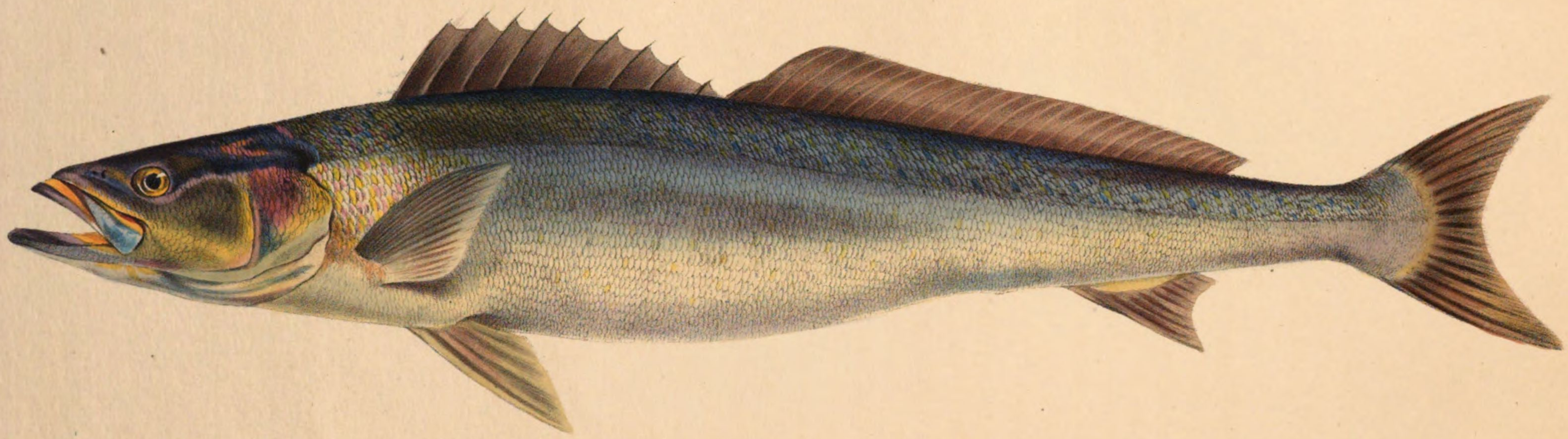
COLOUR.—The upper surface of the head and the back a tint intermediate between brownish purple-red and deep reddish orange (lavender brown mellowed with orange); the sides above the lateral line a paler tint of the same colour, with reflections of a greyish tint. Below the lateral line the colour is pale straw-yellow, and as above the line, is delicately variegated with numerous minute dots of a dull chocolate-red. The sides of the head, including the gill-covers, lips and cirri, pale straw-yellow, shaded with lilac-purple, aurora-red, and pale Dutch orange. Pectoral fins pale sienna-yellow, which fades towards their points into yellowish-white, the other fins wine-yellow, tinted with yellowish-grey, the rays, in all, lightest. Eyes gamboge-yellow, shaded with brownish-orange.

FORM, &C.—Figure oblong ovate; the dorsal and abdominal outlines with nearly the same degree of curvature, which, in both, is slight; snout full and soft; top of the head slightly arched; suboperculum and interoperculum narrow; the hindermost nasal opening the largest; cirri about 4 lines in length; intermaxillary bones extensible. Scales rather small, considering the size of the fish and the family (*Cyprinidæ*) to which it belongs, their outer surface posteriorly rugose from a number of fine radiating *striæ*. The lateral line commences near the upper extremity of gill-covers, and terminates at the middle of the base of the caudal fin, its course near its commencement is slightly deflexed, but on reaching the point below the commencement of the dorsal fin its direction is nearly in a straight line. The commencement of the dorsal fin is a little in front of the pectoral fins, and nearly midway between the snout and base of the caudal fin; the first and second rays of the dorsal and anal fins hard, the others soft, and towards their points divided, the first

ray much shorter than the second. Caudal fin deeply forked. Stomach slender and thin, intestines delicate and much rolled, their length about eight or nine times that of the fish. Swimming bladder formed as in *Cyprinidæ*, the upper portion with sides straight, and the extremities more or less semicircular; the lower portion oblong ovate, the inferior end almost pointed, this portion is strengthened by two spiral bands, the united parts of which inferiorly surround the lower extremity of the bladder; the duct which forms the communication with the bowels arises from the upper extremity of the lower division.

Fin rays, D. 11. P. 16. V. 9. A. 6. C. 18.

This fish is found in many of the rivers of the Cape colony, in situations where the current is slow and the bed muddy. It is rarely caught by the hook, and specimens are most readily procured by dragging the semi-stagnant pools with a net. It is not used as food.



OTOLITHUS ÆQUIDENS.

(Pisces_Plate 13.)

OTOLITHUS ÆQUIDENS.—Cuv. & Val.

Pisces.—Plate XIII.

O. suprà obscurè cœruleo-purpureus, nebulis viridibus aurantiisque variegatus; corporis lateribus infrà lineam lateralem, partibusque inferioribus argenteo-albis, flavo-tinctis et griseo-purpureo-umbratis; oris partibus internis flavis; lineâ laterali subdeflexâ, continuâ; corpore elongato subovale; capite anticè acuminato; maxillâ inferiore ultra superiore porrectâ; squamis parvis, postice semicircularibus.

Longitudo ab apice nasi ad pinnæ caudalis extremitatem in adulto, 3 ped. ad 4 ped. 6 unc.

Otolithus Æquidens, *Cuv. & Val.*—Hist. Nat. des Poissons, tom. 5, folio 66.
Geel Bek of the Cape Colonists.

Colour.—The ground colour of the back, and the upper part of the sides above the lateral line, dull bluish purple, irregularly clouded with oil-green and light orange-red,—the upper surface of the head and the centre of the back in front of the dorsal fin, flashed with resplendent aurora-red; the scapular plate imperial purple, obscured with blackish purple. The sides below the lateral line and the under parts pale silvery-white, tinted with yellow, and shaded, especially the former, with light lavender-purple, the shades strongest towards the lateral line. The sides of the head, including the gill-covers, are oil-green, clouded with imperial purple, resplendent aurora-red and king's-yellow. The intermaxillary bones at the angles of the mouth are ultra-marine blue, and the groove between each and the maxillary bone gamboge-yellow. The dorsal, caudal, and anal fins, are light cochineal-red, shaded with pale brownish red; the pectoral fins dull ash-grey, fading posteriorly into yellowish white, and each fin towards the base is tinted with oil-green. Ventral fins yellowish-white, shaded with dull flesh-red. The edges of the lower jaw towards the angles of the mouth, and the inside of the mouth, are bright gamboge-yellow. The eyes are saffron-yellow, shaded with hyacinth-red.

Form, &c.—Body rather compressed and oblong-ovate, greatest depth nearly one-fifth of its length, the part between dorsal and caudal fins very slender. The dorsal outline rather more curved than the ventral. Head conical, the apex formed by the pointed lower jaw which projects beyond the upper; the length of the head measured to hinder edge of operculum not quite one-fourth of the whole length of the fish. Eyes moderately large, situated directly over the hinder extremities of the maxillary bones; nostrils

double on each side, the hindermost opening the largest, situated about midway between the eyes and tip of snout. The preoperculum towards its hinder margin without scales, the covering radiated. *Teeth* numerous, particularly towards the anterior extremities of the jaws, where they are irregularly disposed; they are curved backwards, and pointed; in the upper jaw, the anterior teeth are the largest, in the lower jaw those situated towards the angles of the mouth. The lateral line commences at the shoulder-plate and runs nearly parallel with the line of the back till it reaches opposite the middle of the first dorsal fin, it then extends slightly downwards till it reaches nearly opposite the commencement of the anal fin, from thence it proceeds in a straight line to the base of the central ray of the caudal fin. The line is slightly interrupted, and consists of a series of slender raised tubes, one tube to each scale, the basal opening on the outer, the apical opening on the inner surface of the scale; externally, opposite the apical opening, each tube appears as if it divided into a number of small branches. The scales are rather small as compared with the size of the fish, somewhat five-sided, the posterior side which form the apical portion semicircular, each scale presents three forms of organization, a triangular portion embracing the whole of the base, more or less reticular, the lateral portions finely ribbed, and the apical portion subcellular; the scales of the sides above the lateral line and those of the back smaller than those below the line. The first dorsal fin very low where it unites with the second; its height anteriorly is considerably greater than that of the second dorsal, the second and third rays are the longest; the hinder extremity of the second dorsal is rather nearer to the caudal fin than the corresponding extremity of the anal is to the caudal. Pectoral fins subovate; the caudal fin posteriorly semilunar, the convexity forwards. Length of a full grown fish from three feet to three feet and a-half.

Fin rays .....D. 9—27. P. 16. V. 6. A. 10. C. 18.

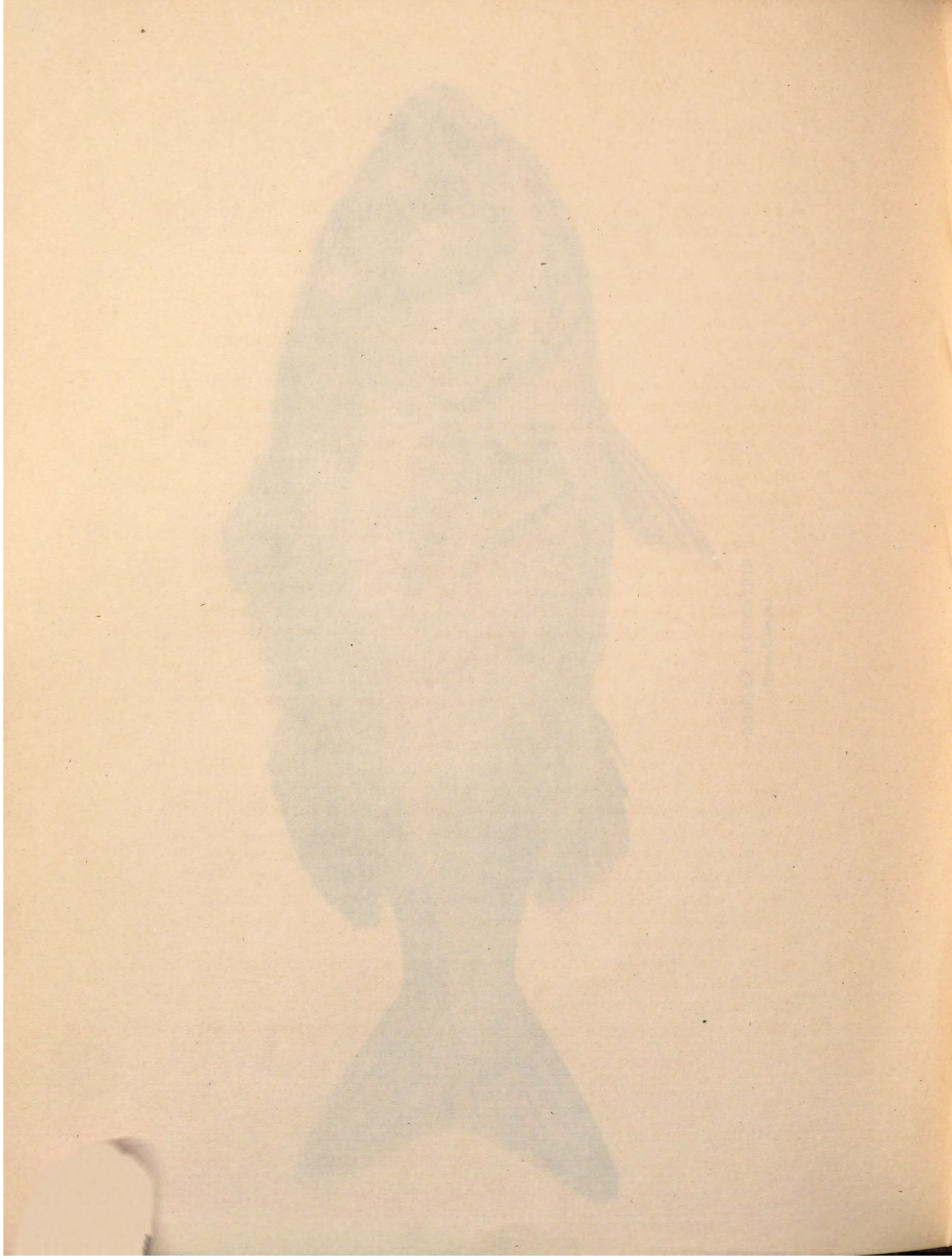
The *Geel Bek* occurs abundantly in the seas immediately around the southern point of Africa, and is often caught in numbers in Table Bay, both by the hook and the seine. It is not much esteemed as food.

DENTEX RUPESTRIS

(Pisces_Plate 14.)

DENTEX RUPESTRIS.

(Pisces_Plate 14.)



DENTEX RUPESTRIS.—Cuv. & Val.

Pisces.—Plate XIV.

D. superne rubra, cyaneo, viridi, purpureoque umbrata; inferne pallide flavo-albá, pallide cyaneo-umbrata; labio superiore purpureo, inferiore orisque angulo aurantiis; pinnâ dorsali purpureo-rubrâ, rubro-tinctâ; oculis aurantiis, pallide flavo, cæruleoque variegatis; capite magno; lineâ fasciali declivi; corpore antice valde crasso versus pinnam caudalem gracile; dentibus caninis, utraque maxillâ, quatuor, fortibusque curvatis.

Longitudo adulti 3 ped. 10 unc.

Dentex Rupestris, *Cuv. & Val.*—Hist. Nat. des Poissons, tom. 6, folio 231.
Roode Steen Brass of the Cape Colonists.

Colour.—The ground colour of the back and sides, above the lateral line, aurora-red, irregularly clouded with ultra-marine blue, oil-green and dull lavender-purple; towards the tail there is a distinct orange tint; below the lateral line the ground colour, anteriorly, towards the gills, is pale lemon-yellow,—posteriorly, pale aurora-red, tinged with orange-yellow, and the whole clouded with ultra-marine blue. The ground colour of the upper part of the head is pale hyacinth-red, clouded with light orange, ultra-marine blue, and lemon-yellow, the lateral and under parts of the head aurora-red, clouded with lavender-purple and lemon-yellow. The upper lip is a pale plum-purple, the lower lip and the angles of the mouth light Dutch-orange. Dorsal fin brownish purple-red shaded with light tile-red. Pectoral fins aurora-red, darkest above, and at the base clouded with ultra-marine blue, the ventral, anal, and caudal fins, are pale reddish-orange, shaded with light brownish red. Eyes deep reddish orange, pale yellow and ultra marine blue, the colours disposed in irregular circles which pass into each other. The whole of the fish, with the exception of the fins, has a mother-of-pearl gloss.

Form, &c.—Body large, thick, and bulky, between dorsal and caudal fins rather slender; dorsal outline slightly curved, abdominal outline as far as anal fin nearly straight, the portion on which the anal fin rests is inclined upwards, the remaining part sloping slightly to the caudal fin. The profile of the face strongly declining and broken, or rendered irregular by a large projection or bulge over the anterior and superior edge of the orbit. Lower

jaw deep and robust; both lips large and pulpy. Teeth disposed in a band upon the margin of each jaw; all, except those which form the outer row, small, and closely set, those of outer row rather large, cylindrical curved and pointed, the four front ones of each jaw very powerful, and many times the size of the others, but of the same shape and with a like curve. Nostrils on each side double, the hinder opening the largest; they are situated under and immediately in front of the anterior extremity of the superciliary bulge. Eyes very large. Back rather compressed, its edge anteriorly to dorsal fin thin and cutting. Lateral line broken, and consists of a series of slender hollow tubes, one on each scale, the hinder opening of which is on the exterior surface of scale, the anterior on inner surface; the line extends from the upper edge of the operculum to the centre of the base of caudal fin, towards its commencement it is slightly arched, the curvature upwards, then nearly straight till it pass the hinder extremity of dorsal fin, from this point its course is oblique or sloping downwards to its termination. Scales very large and four-sided, the angles rounded. Dorsal fin commences some distance behind base of pectoral fins; pectoral fins somewhat falciform.

Fin rays, D. 22. P. 17. V. 6. A. 11. C. 19.

The *Rooye Steen Brass* is taken in the seas which wash the coasts of Southern Africa, generally by the hook, frequently also in nets; and the number caught at one time is sometimes so great, as even to endanger the net, and make it a work of labour to get it on shore. It is highly esteemed as food.

SCIÆNA HOLOLEPIDOTA.

(Pisces—Plate. 15)

SCIÆNA HOLOLEPIDOTA.—Cuv. & Val.

Pisces.—Plate XV.

S. capite cœruleo-purpureo, rutilo, flavo et flavo-viride nebulato; dorso, lateribusque supra lineam lateralem aurantio-carneis effuse purpureo-variegatis, ambobus antice viridi-cœruleo splendentibus; lateribus infra lineam lateralem pallide carneis viridi-purpureo præcipue versus caudam umbratis. Oculis cœruleo-purpureo et flavo-coloribus in formâ annulorum ordinatis.

Longitudo ab apice nasi ad pinnæ caudalis extremitatem 3 ped.

Sciæna Hololepidota, *Cuv.* & *Val.* Hist. Nat. des Poissons, tom. v. p. 33.
Labrus Hololepidotus, *Lacepede?* Hist. Nat. des Poissons, tom. iii. p. 448. pl. 21. fig. 2.

Colour.—The upper and lateral parts of the head bluish purple, the former flashed with resplendent aurora-red, the latter mottled with clouds or shades of pale saffron-yellow and oil-green; the sides of the lower jaw and the under surface of the head pale flesh-red. The back near to the head, and the sides of the body above the lateral line, immediately under the portion of the back referred to, resplendent greenish blue; the other parts of the back and of the sides above the line a colour intermediate between flesh-red and Dutch-orange, freely and extensively variegated however with shades and tints of imperial purple, which are most distinct anteriorly. The sides below the lateral line are a light flesh-red, strongly shaded, particularly towards the tail, with greenish purple; belly pale flesh-red, inclining to reddish white. The first dorsal fin and the basal third of the second a tint intermediate between pearl-grey and flesh-red the other two-thirds of the second dorsal fin shaded with dull reddish purple; the pectoral fins are a pale pearl-grey, tinted towards the tips with gamboge-yellow; the ventral fins pearl-grey, sparingly clouded with yellow. The anal and caudal fins are flesh-red, shaded longitudinally with dull reddish purple. Eyes bright bluish purple, and primrose-yellow; the colours disposed in rings; the outer ring purple, the inner ring yellow.

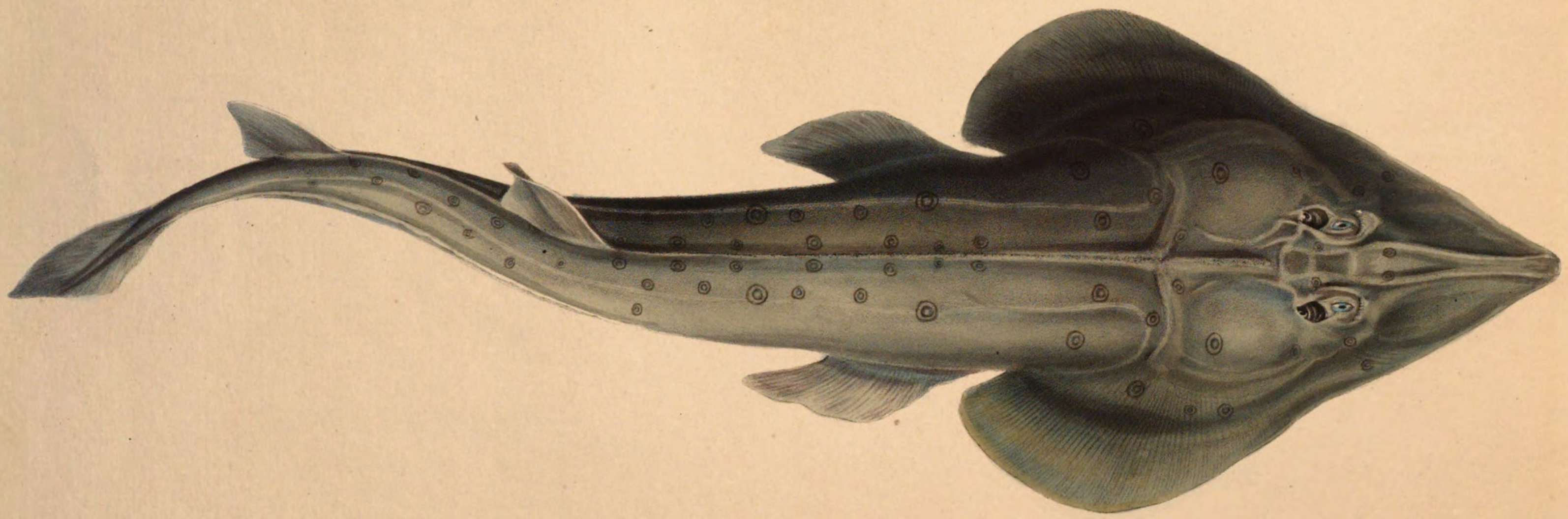
Form, &c.—Figure elongated subovate; dorsal outline anterior to the first dorsal fin oblique and slightly arched, from the commencement of the first dorsal to the hinder extremity of the second dorsal, slightly sloping downwards; from the last-named point it is nearly straight to within a short distance of the caudal fin, and posterior to the straight portion it extends

upwards and backward to the last-named fin. Abdominal outline between apex of lower jaw and anal fin nearly straight or only very slightly waved, the portion of outline in which the fin is set slightly arched, with an inclination upwards, the remaining portion with a slight slope upwards till within a short distance of the caudal fin, where it changes its inclination, and slopes downwards and backwards to the base of the fin. Head rather large; nose rounded and obtuse; gape directed forwards, of moderate width, and each jaw furnished with a row of moderately strong, pointed, cylindrical, and rather short teeth, which have a curvature inwards, and are placed rather widely apart. Besides these teeth, there is in the upper jaw a narrow row of small slender teeth on their inner side, and in the lower jaw there is scattered around the bases of the larger teeth a number of smaller ones, nearly similar in form to the larger ones. The eyes are situated near to the superior outline of the head, and directly over the hinder extremities of the maxillary bones; nostrils small, double, and placed directly in front of the inner corner of the eye, and nearly directly over the angle of the mouth. The head, the gill-covers, and the body, are covered with moderate-sized scales, which, on the latter, are disposed in oblique rows, the direction of which is downwards and backwards. The lateral line is arched anteriorly, the convexity upwards, the posterior half is nearly straight. Dorsal fin deeply notched between the spinous and cartilaginous portion, the third and fourth spinous ray the longest, the second and fifth about equal and rather shorter than the fourth, the first and seventh nearly of equal length, the second portion has its rays nearly all of equal length, and all rather longer than the eighth spinous ray. Pectoral fins somewhat fan-shaped, the upper rays longest. The ventral fins are directly under the pectoral fins and the commencement of the dorsal fin, and are truncated behind, as is also the anal fin. Caudal fin posteriorly very nearly straight.

B. 7; D. 10/19; P. 17; V. 6; A. 8; C. 18.

Individuals are frequently caught which measure three feet, and even more, in length; but the ones most commonly obtained are between two feet five and two feet eight inches.

This fish, the *Kabbelgaauw* of the Dutch inhabitants, is principally taken by means of baited hooks; but many occasionally are caught in seines. It is held in moderate estimation as an article of food, and from such numbers existing in the vicinity of Table Bay, it forms one of the staple fish of the Cape market.



RHINOBATUS ANNULATUS.

(Pisces_Plate 16)

RHINOBATUS (SYRRHINA) ANNULATUS.—Smith.

Pisces.—Plate XVI.

R. suprà flavo-cinereus annulis livido-brunneis variegatus; infrà carneus; aculeis parvis in ordine transverso ante oculum; naso depresso antice rotundato; aculeis parvis in medio dorsi inter caput et primam pinnam dorsalem.

Longitudo ab apice nasi ad extremitatem pinnæ caudalis, 39 unc.

Rhinobatus (Syrrhina) annulatus, *Muller et Henle*, Besch der Plagiostomen, p. 116.

Colour.—Above, the tint is intermediate between yellowish grey and greenish grey, the former colour predominating on the fins; below, light flesh-red. The hinder parts of the head and the back and sides in front of the second dorsal fin are sparingly sprinkled with eye-like spots, each spot consisting of two dark rings, a light ring and a light central spot; the dark rings are clove-brown, the light ring and the central spot bluish white, or pale lavender-purple. Eyes silvery with a greenish tint; apex of snout superiorly pale flesh-red.

Form, &c.—Head flat and subtriangular, the snout, which forms the apex of the triangle, thin and rounded; the body convex above, nearly flat beneath, and tapering gradually from the hindhead to the caudal fin, the portion immediately in front of the latter very slender and subcylindrical. Opening of eyes rather small and ovate; postorbital opening immediately behind the eye, oblique, large, oval, and with two small, triangular, cuticular lobules projecting forewards from its hind edge, towards the upper extremity. About a quarter of an inch in front of each eye is a short semicircular transverse ridge, the hinder edge of which is armed with a number of short, strong, and pointed teeth, directed horizontally backwards, and there are indications of a few others disposed in a small cluster above the upper extremity of each post-orbital opening. Nasal bones long, about one inch apart between the dentated ridges in front of the eyes, towards apex of nose nearly in contact and parallel. Nostrils large, oblique, and anteriorly divided into two parts by a loose triangular lobule, the inner portion of which is so prolonged as nearly to meet its fellow of the opposite side, the hinder edge of prolongation loose, the anterior edge throughout attached. Mouth directly transverse, and both jaws armed with smooth, convex, and closely-set teeth, transversely, of an

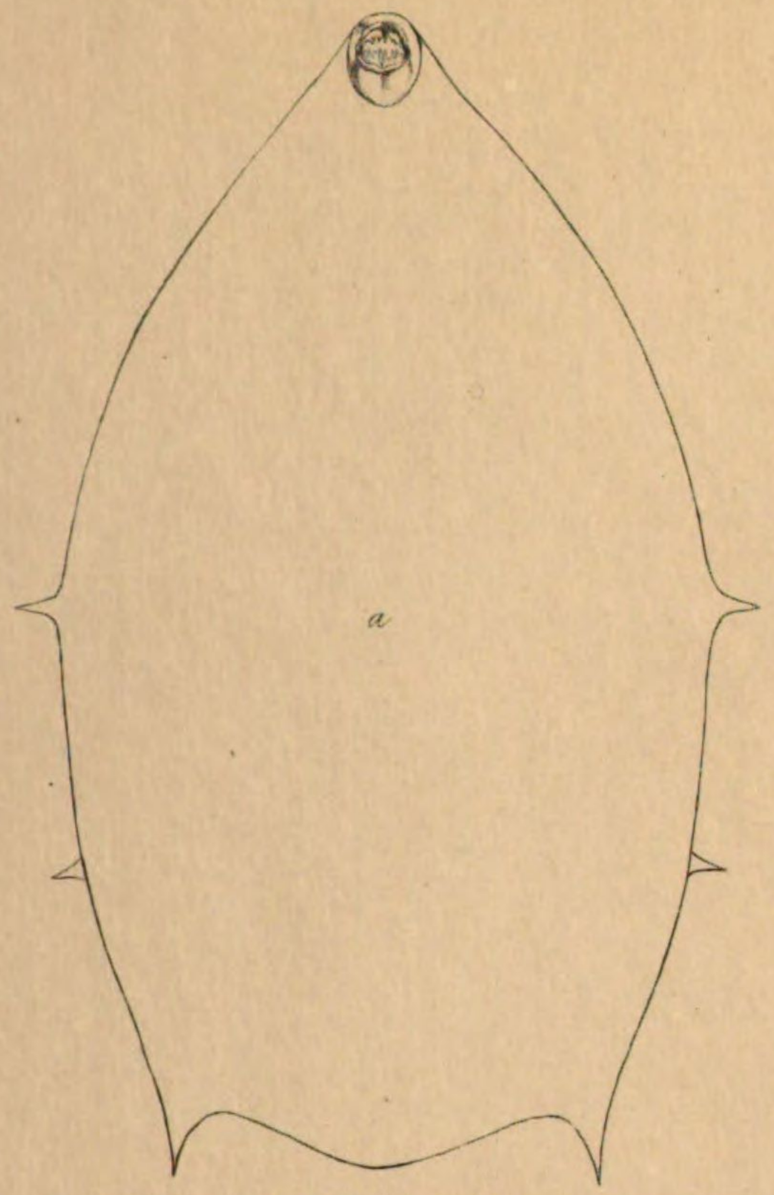
oval form. Dorsal fins rather small, placed far back on the body, and each truncated behind. Ventral fins small, the hinder and outer edge prolonged. Caudal fin somewhat oval, or imperfectly diamond-shaped, the upper part posteriorly most prolonged. The spines in the course of the dorsal line are very short, slender, obtuse, and scarcely visible in the fresh fish; and the skin, if stroked from the head, is smooth; if towards the head, rough. The eye-like variegations are alike, as regards number and position, on both sides.

DIMENSIONS.

	Inch.	Lin.		Inch.	Lin.
Length from the tip of the nose to the point of the tail	39	0	Distance between the second dorsal fin and the commencement of the caudal fin	2	6
Distance between the tip of the nose and the eye	5	1½	between the tip of the nose and the outer angle of the nostril	4	10
between the tip of the nose and the commencement of first dorsal fin	24	6	between the tip of the nose and the mouth.....	5	6
between the first dorsal fin and the commencement of the second	5	0	Width of the mouth	2	3
			Greatest width of the body, including the pectoral fins	12	6

The length between the tip of the caudal fin and the anterior extremity of the eye is nearly six and a half times that between the anterior extremity of the eye and the point of the snout.

The first specimen of this fish which I procured, was taken in a seine near the mouth of the Cowie River, and I have seen others of the same species caught in Algoa Bay. It has not yet been found to the westward of Cape Point, nor is it known to the fishermen of Simon's Town. It is always found in situations where the bottom of the sea is level and sandy.



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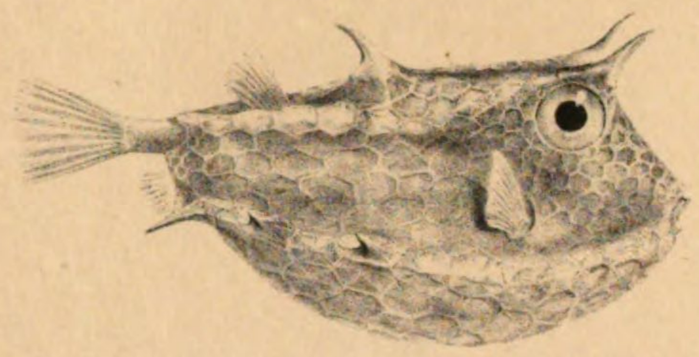

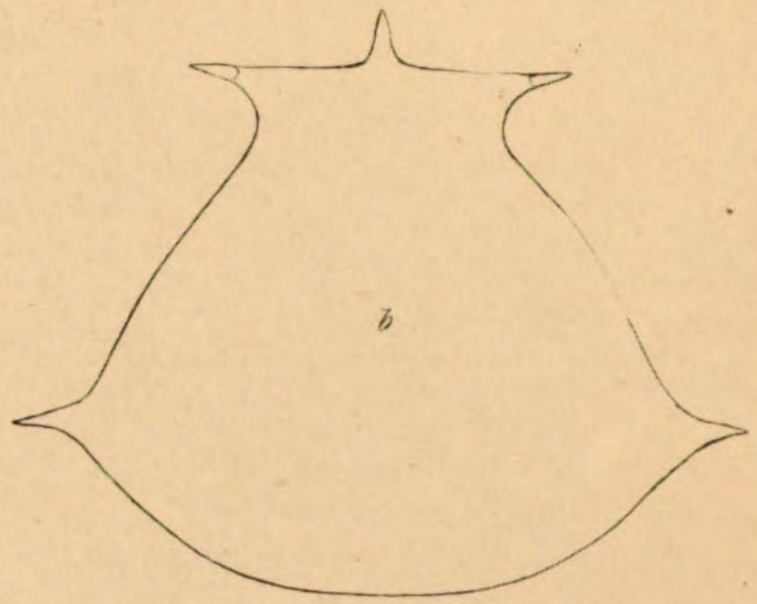

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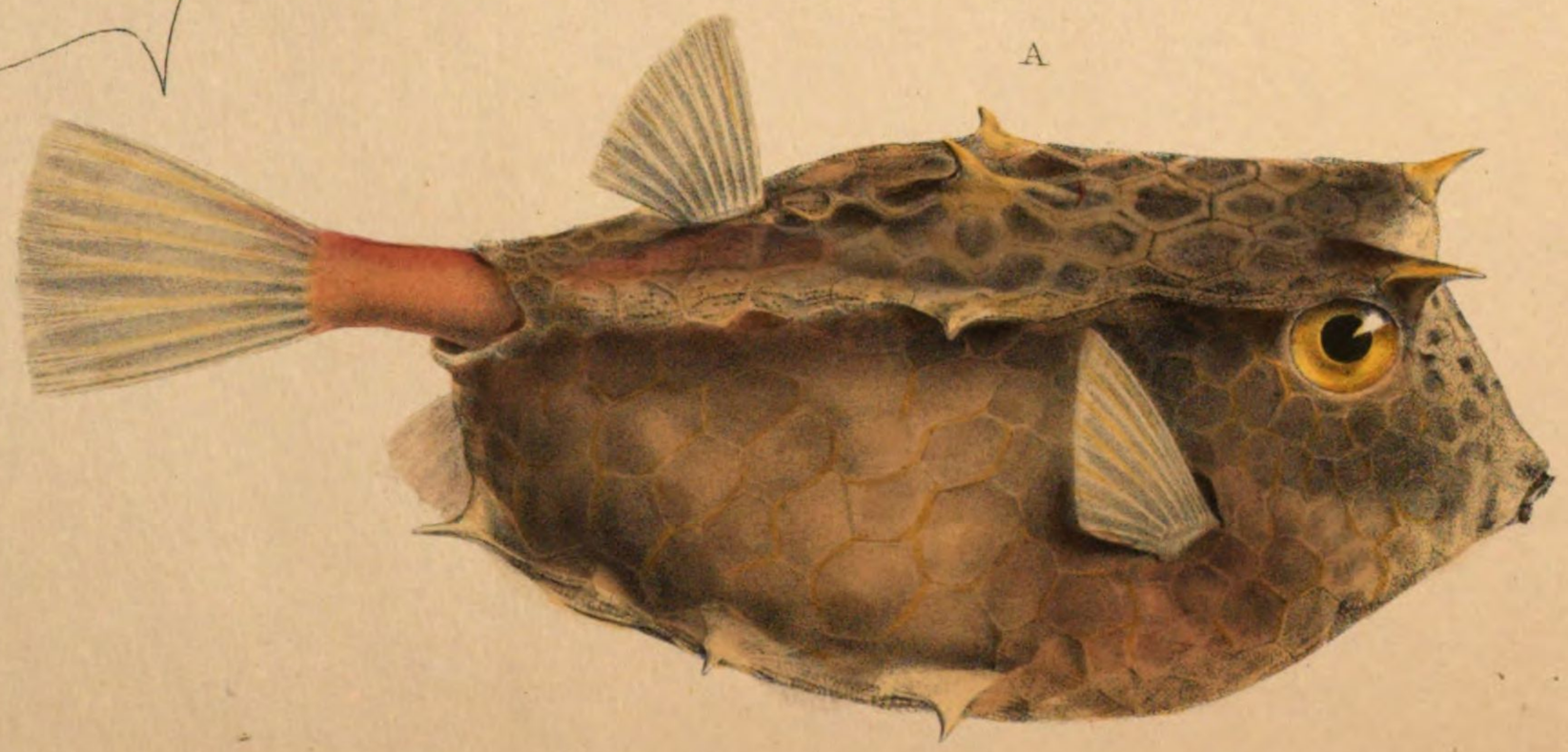


OSTRACION, undecimaculeatus.
(Pisces—Plate 17)

OSTRACION UNDECIM-ACULEATUS.—Smith.

Pisces.—Plate XVII.

O. suprà lucide ochraceus; infrà stramineus; pinnis subochraceis; figurâ quadrangulare, angulis aculeis armatis, quinque dorso, sex abdominis lateribus; fissurâ branchialè angulatâ.

Longitudo a nasi apice ad extremitatem pinnæ caudalis 6 unc.

Colour.—Back and sides intermediate between ochre and straw-yellow, the tint clear and semipellucid; below straw-yellow or pale cream-yellow; fins the same colour as the back, only paler and without the lucid hue. In many specimens the upper and lateral parts of the head and the lower portions of the sides over the abdominal angles irregularly tinged with a dull orange-coloured brown.

Form, &c.—Figure quadrangular; the superior or dorsal side much narrower than the inferior or abdominal side, and the lateral sides, in regard of breadth, intermediate between the two. The angle at each side of the back, formed by the junction of the dorsal and lateral sides, nearly straight anteriorly, posteriorly convergent, and behind the dorsal fin forms with its fellow of the opposite side a flat triangular and obtuse point, which projects over the upper surface of the tail. The breadth of the dorsal side is greatest at the points where the angles begin to converge, and each point is armed with a short, pointed, horizontal spine. Besides those spines there are three others on the back, one projecting anteriorly from each superciliary ridge, and one about midway between the two first-mentioned, near the centre of the back in front of the dorsal fin. Top of the head level posteriorly, concave anteriorly, the concavity broad between the eyes, narrow towards the hindhead; the sides of head under the eyes compressed; face moderately broad and rounded, muzzle rather produced and projecting slightly beyond the general slope of the face. Branchial opening angular, and situated some distance behind a line let fall from the outer corner of the eye. The lateral sides of the cuirass, which are slightly waved, diverge from above downwards, and the abdominal angles, formed by the lateral and under sides of the cuirass, anteriorly obtuse, posteriorly acute, and each is armed with three short spines, the first situated about midway between the nose and hinder extremity of the cuirass, the last at the extremity of the latter, and the third about equidistant between these two: the direction

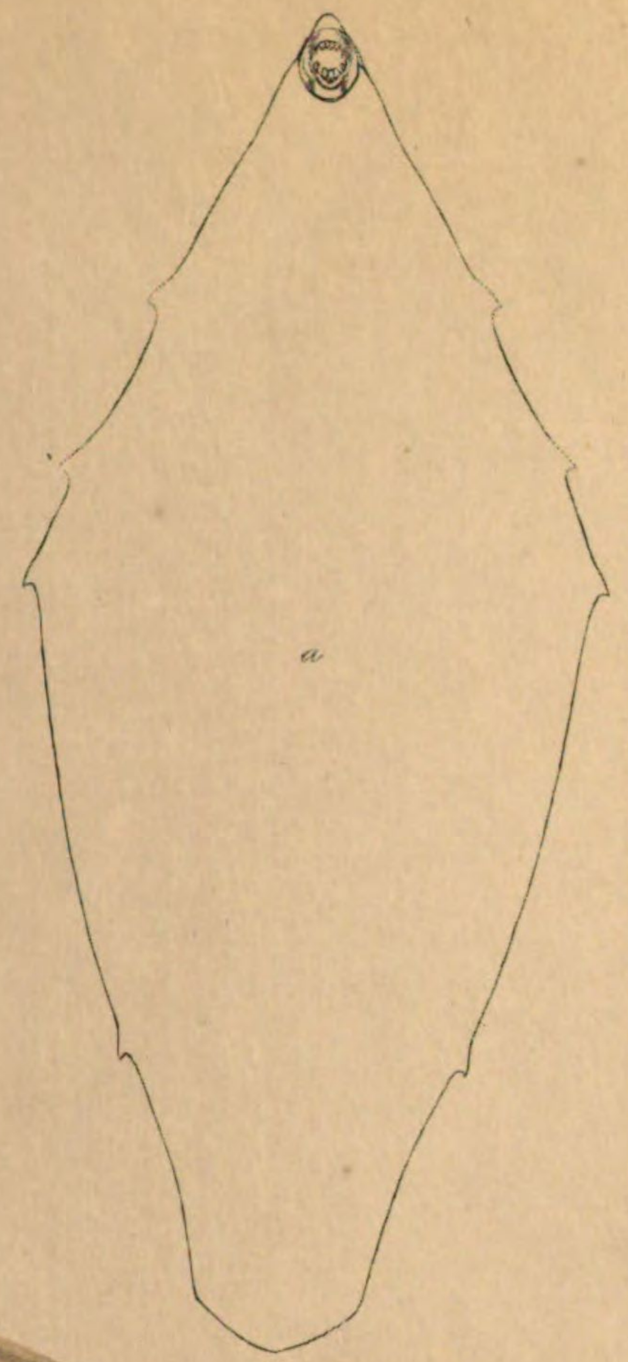
of all is horizontal, the two first extend laterally, the last backwards and outwards. The inferior or abdominal side slightly subovate and convex, narrow anteriorly, subtruncate posteriorly, and with a slight semicircular projection immediately under the tail. The plates of the back are irregularly five or six sided, each having its margin prominent and considerably raised above the disc; those of the sides present a like irregularity in regard to form, but their margins are less distinctly indicated, and there is no very marked inequality between them and the discs. The plates of the sides of the head are small, and fashioned like those of the back. The plates of the belly have their margin very prominent, and their disc hollow; the former is smooth, and the latter is studded with pellucid granules; the anterior portion of the back, the sides of the head, and all the angles are also more or less granular. The anal is situated considerably behind the dorsal fin, and both are rather fan-shaped. Tail subcylindrical; caudal fin moderately long, and square or slightly rounded behind. The pectoral fin has the upper rays longest, the lower one shortest.

DIMENSIONS.

	Inch.	Lin.		Inch.	Lin.
Length from the nose to the hinder edge of the cuirass	5	6	Distance between the nose and the base of the anal fin	3	8
Distance between the nose and the base of the dorsal fin	3	0	between the nose and the branchial opening	1	2

YOUNG.—In young specimens the back is very narrow, and the lower or abdominal parts very broad and bulging; the spines, in proportion, are more elongated, and the figure altogether is less regularly angular.

Inhabits the seas about the Cape of Good Hope, and also the Indian Ocean. Specimens are frequently found on the beech after gales of wind, both to the eastward and northward of Cape Town, and individuals are occasionally taken in nets in Table Bay.



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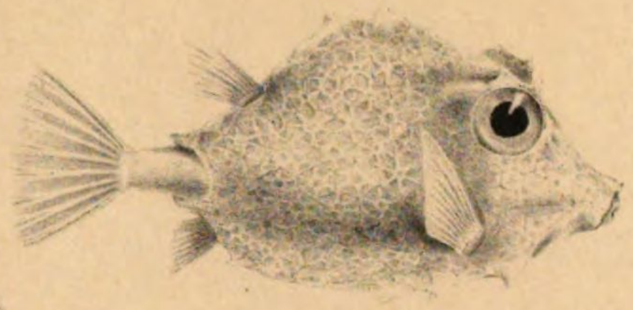

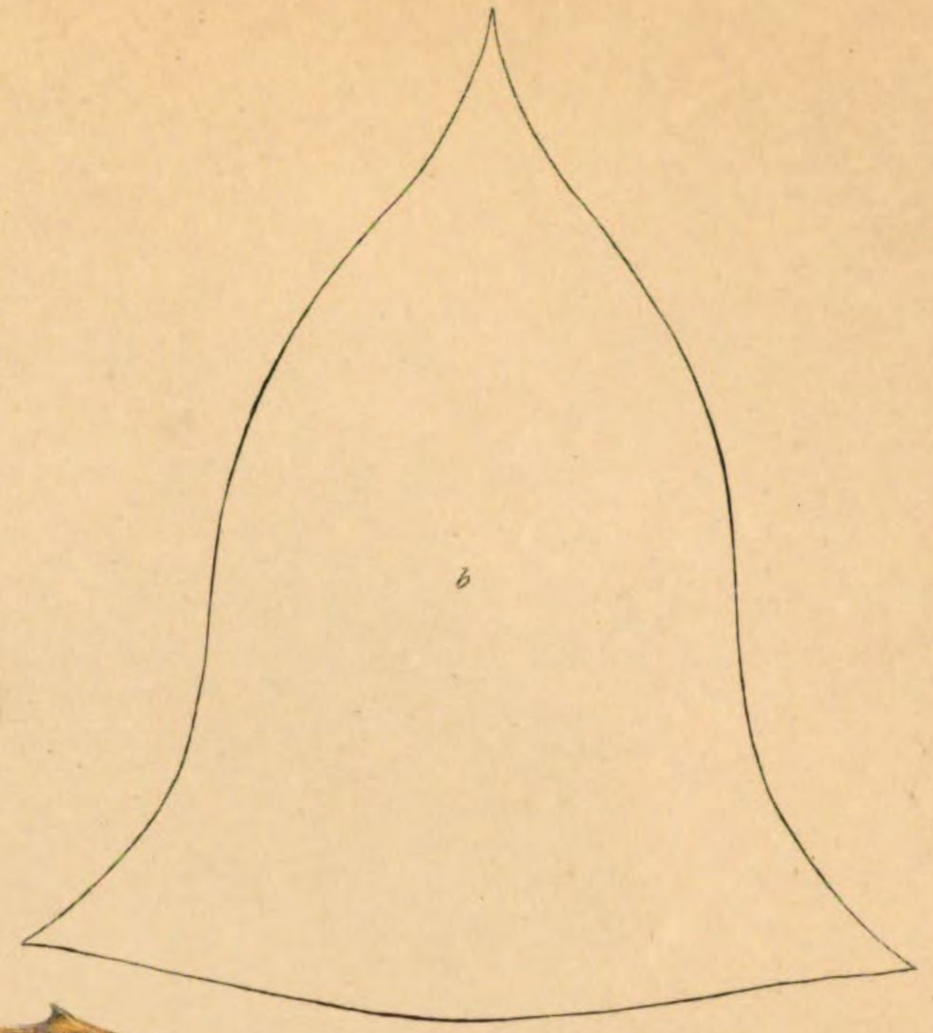

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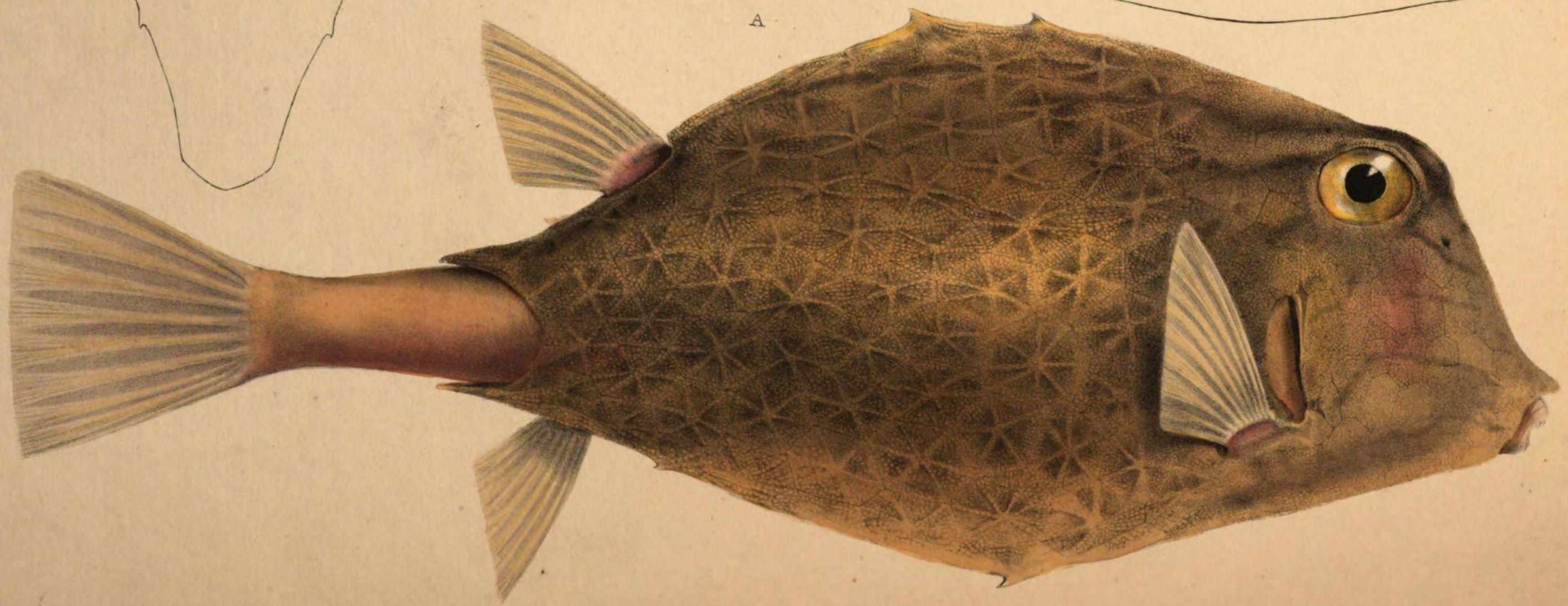


OSTRACION BICUSPES

(Pisces.—Plate 18)

OSTRACION BICUSPES.—Blumenb.

Pisces.—Plate XVIII.

O. suprà pallide flavo-brunneus, aurantio-brunneo nebulatus; infrà lactifloreus; caudâ flavo-brunneâ; pinnis lactifloreis; carinâ dorsi angulisque lateralibus, duobus aculeis parvis armatis; naso obtuso, sub-horizontale.

Longitudo e nasi apice ad pinnæ caudalis extremitatem 10 unc.

Obstracion Bicuspes. *Blumenb.* Abbild. Naturhist. Gegen, No. 58.
Ostracion stellifer. *Schn.* Syst. Icth. Bloch.

Colour.—Back and sides pale yellowish brown, faintly tinted or clouded with light orange-coloured brown; belly pale cream-yellow; tail, behind cuirass, pale yellowish brown; fins cream-yellow, each at the base faintly tinted with light yellowish-brown; sides of the head with three or four horizontal livid coloured lines.

Form, &c.—Figure triangular, the apex of the triangle formed by the ridge of the back (*vide* fig. 6). Head above broad; between eye-brows slightly concave; behind eyes rather convex; sides of the head compressed; facial outline narrow, and removed but little from the perpendicular; muzzle protuberant, pointed, and forming an obtuse angle with the line of the face. Mouth directed obliquely downwards; lips thick; teeth moderately long and slender; eyes rather large; branchial opening perpendicular and directly under the outer canthus of the eye. Face rough from granules, but no distinct plates; plates of the side of the head small, generally six-sided granular, but without divergent rays. The ridge of the back is acute, moderately elevated, slightly arched, and armed with two small spines, one behind the other, towards the middle or most elevated portion of the curve; the arch commences at the centre of the hind head, a little behind the outer canthus of the eye, and ends at the commencement of the dorsal fin. Behind the dorsal fin the upper part of the cuirass is flat, and rather broad, its hinder part projecting some way along the upper surface of the tail, in the form of an obtuse point. The sides slope obliquely from the ridge of the back to the abdominal angles, and behind the eyes bulge considerably beyond a regular slope, as will be understood on reference to section *b*; the hinder edge of the sides

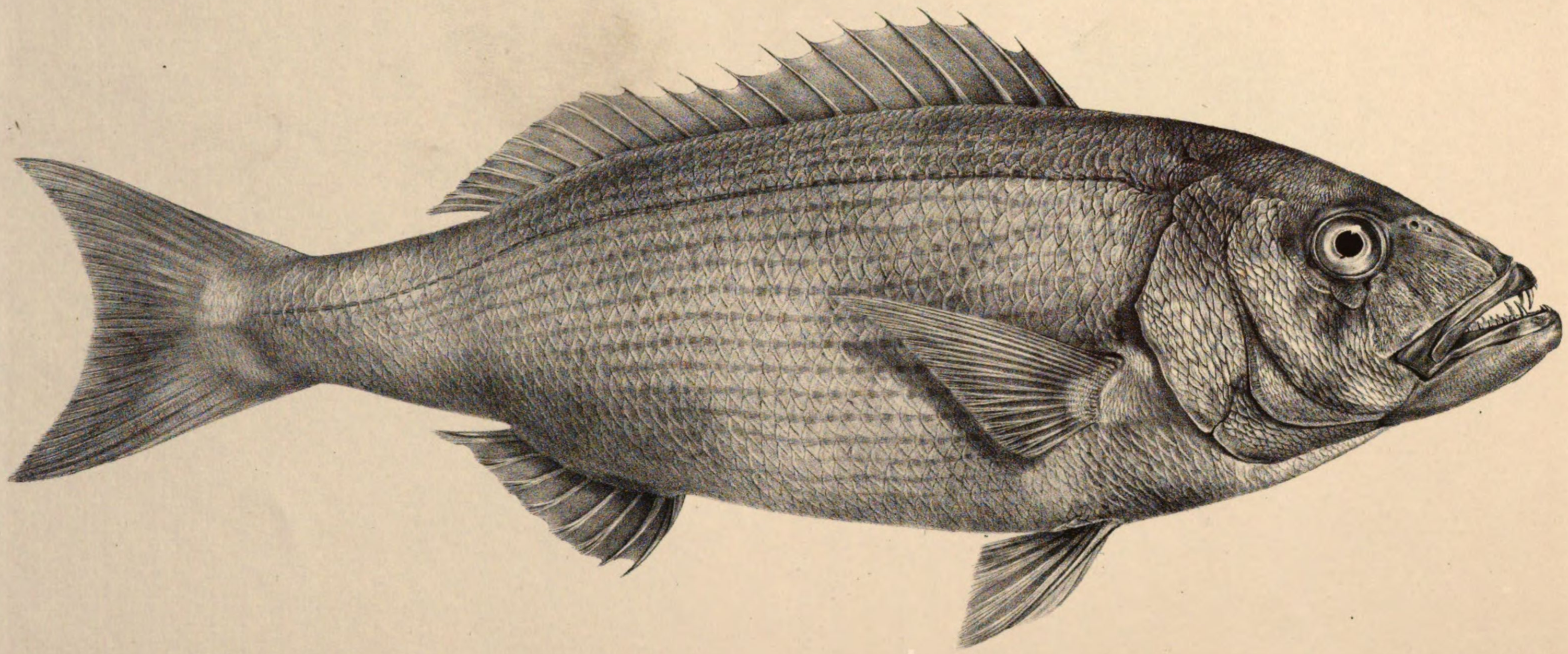
of cuirass semicircular, the convexity forwards. Under surface nearly flat, and somewhat diamond-shaped; the greatest width a little way behind the commencement of the second third of the body; the hinder extremity of the under surface broad and triangular, its termination directly under the point which forms the upper elongation. The lateral or abdominal angles spreading particularly towards the middle of the cuirass; towards the head they are rather obtuse, elsewhere thin and sharp, and each, when perfect, is armed with two or four short and slender spines, the longest and strongest of each side situated at the most diverging point, as represented in figure *a*. The plates of the cuirass are irregularly six or seven sided, and the surface of each is divided into six or seven somewhat triangular compartments, by the same number of narrow rugose ridges radiating from a common centre, and each compartment, like the ridges, is more or less rugose, from the existence of a number of small semi-circular granules. In consequence of a certain degree of regularity in the arrangement of some of these ridges, an appearance is produced as if the sides were crossed longitudinally by several rows of long, narrow, and oval compartments, arranged like links of a chain. The plates of the under surface six-sided; those towards the head closely coated with granules; those on the belly with four or six divergent ridges, and only a very few granules. Tail subcylindrical; dorsal, pectoral, and anal fins square behind, and the first ray of each the longest; caudal fin posteriorly slightly rounded, or square.

DIMENSIONS.

	In.	Lin.		In.	Lin.
Length from the point of the nose to the hinder edge of the caudal fin ...	10	0	Distance between the hinder angle of the eye, and the base of the anal fin ...	4	9
Distance between the hinder angle of the eye, and the base of the dorsal fin ...	4	3	Distance between the nose and the branchial opening	1	10½

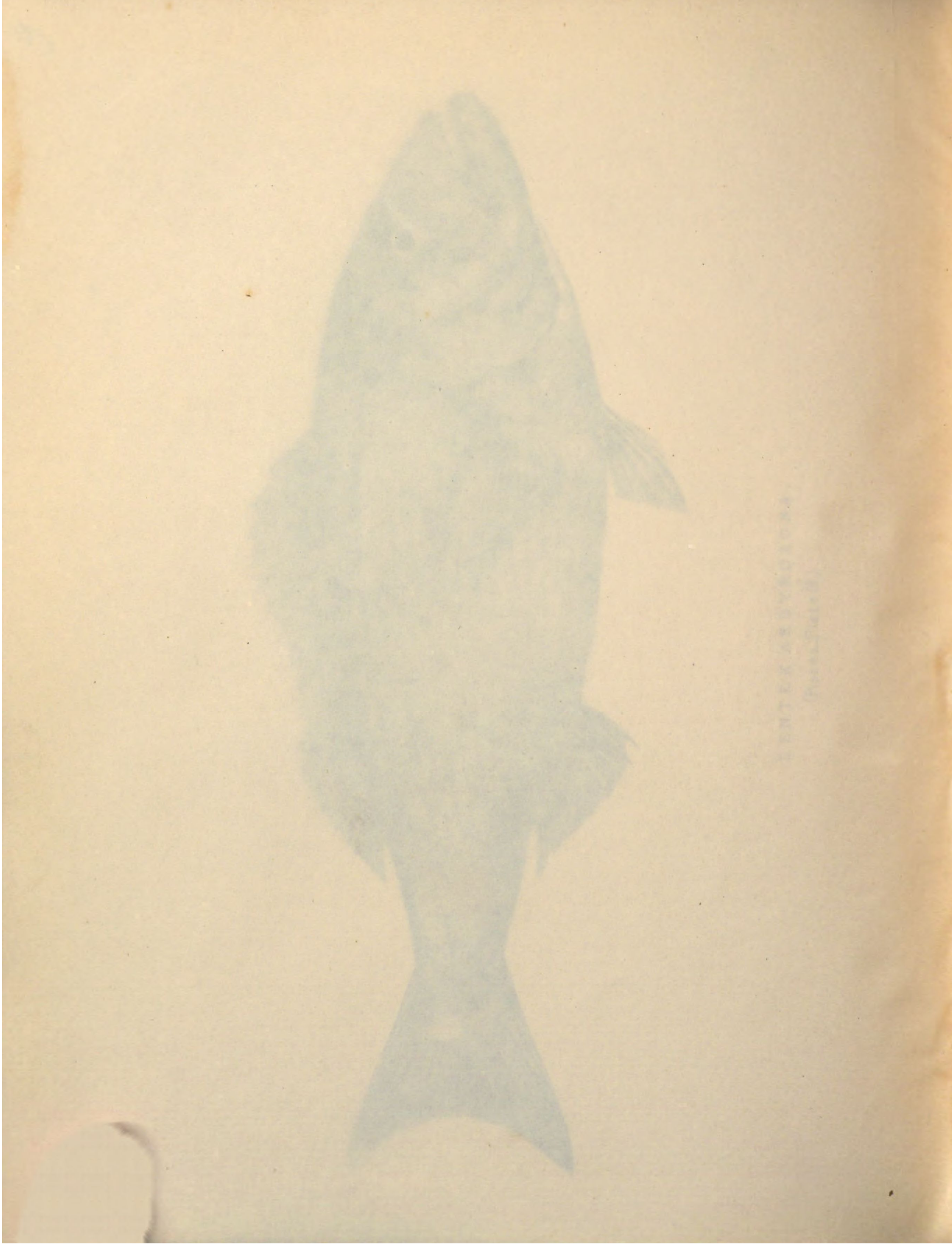
In very young specimens (fig. B), the superciliary ridges are arched, sharp, and armed with two delicate compressed spines. The arch of the back is greater than in adults, and the abdominal angles are more expanded horizontally.

Inhabits the seas of Southern Africa, and found most frequently in the bays of the South-eastern coast.



DENTEX ARGYROZONA.

(Pisces_Plate 19.)



DENTEX ARGYROZONA.—Cuv. & Val.

Pisces.—Plate XIX.

D. superne subrubra, subtus carnea, lineis longitudinalibus pallide purpureo-notatis; dentibus caninis maxilla mandibulaque quatuor; mandibulæ apice ultra maxillam porrecta; squamis capitis fortiter imbricatis.

Longitudo e capitis apice ad extremitatem pinnæ caudalis 23 unc.

Dentex Argyrozona, Hist. Natur. des Poisson, par Cuvier et Val., tom vi., p. 235.

Silver fish of the Cape Colonists.

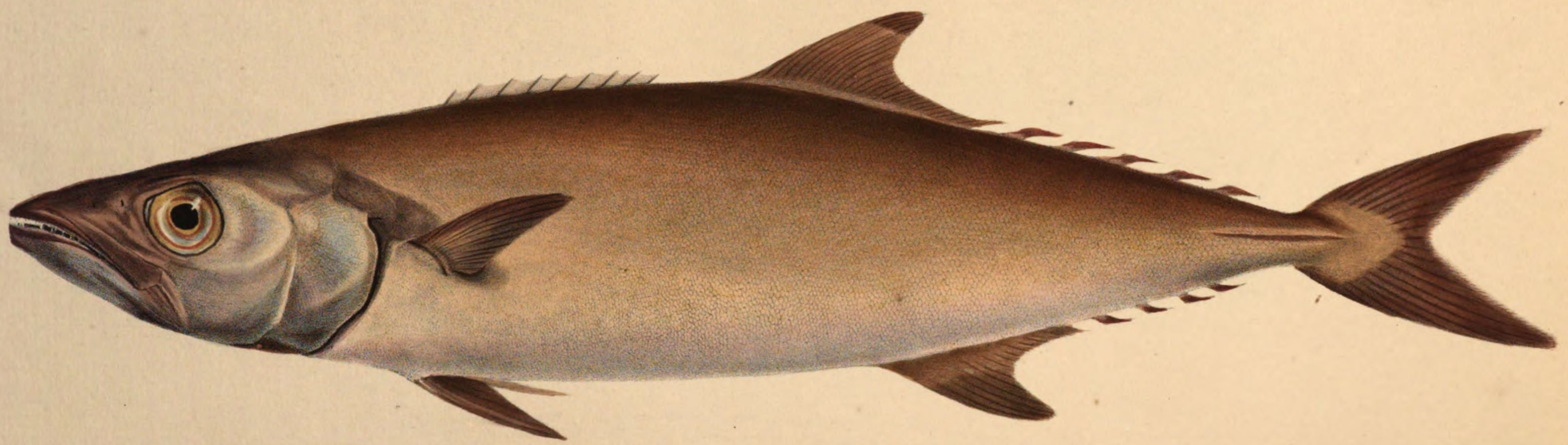
Colour.—The back and the sides of the body above the lateral line a tint intermediate between scarlet and aurora-red; the sides below the lateral line flesh-red, variegated with a number of narrow, longitudinal bands of faint purple; the under parts of the head and body pale rose-red,—all, in certain lights, exhibiting slight tints of purple. The upper surface of the head, the nape, and the preorbital plate a colour intermediate between yellowish brown and honey-yellow; the other portions of the sides of the head and the gill-covers flesh-red, slightly tinted with honey-yellow and faintly clouded with violet-purple; the operculum and preoperculum bordered posteriorly with a silvery grey band, speckled with minute dark points. Dorsal fin pale purplish red; pectorals intermediate between scarlet and aurora-red; ventral, anal, and caudal fins flesh-red, slightly shaded with pale scarlet. Eyes bright scarlet-red.

Form, &c.—Figure oblong oval, the dorsal outline rather more arched than the ventral. Head anteriorly pointed, the lower jaw rather longer than the upper; mouth moderately large and slightly inclined upwards. Eyes rather large. Nostrils double, one directly before the other, about a line apart, and the hindermost almost twice the size of the front one; they are on a level with the upper edge of the orbit, and not quite half an inch in front of it. The hinder edge of the preoperculum superiorly nearly vertical, inferiorly arched or semicircular. Hinder edge of operculum semilunar and slightly waved. Teeth partly canine partly criniform, the former external to the

latter, the four anteriormost of each jaw the largest and situated widely apart, the middle two of the four are nearly directly in front and much smaller than the two behind them; the others, which form a continuous row behind the large ones, are closely set, comparatively small, pointed, slightly curved inwards, and largest towards the angles of the mouth; the criniform teeth are situated on the inner side of the canines, and have a few small ones of the latter description generally mixed with them, particularly towards the apex of the lower jaw. The upper surface of the head anteriorly, the preorbital plates, the lips, the under surface of the lower jaw, and the operculum and preoperculum towards their posterior edge, smooth and without scales; all the other parts, the fins excepted, covered with scales. The scales on the upper and hinder surface of the head are small, highly imbricate, and of a somewhat rhomboidal form; those of the body are much larger than those of the head, and the portion of each which is uncovered is of a semilunar shape, they also are highly imbricate. The scales immediately above and in front of the ventral fins are rather small, but in disposition and configuration somewhat like those of the operculum; at the base of each ventral fin externally a long pointed horny scale. The operculum and preoperculum near to the hinder edge are covered with a fine thin smooth skin. Lateral line slightly arched and has its origin a little above the superior angle of the operculum, its termination at the base of the caudal fin about midway between its upper and under edges. Dorsal fin highest anteriorly, the fifth ray longest, the third and fourth only slightly shorter, the first and second cartilaginous rays rather longer than the last bony ray. The pectoral fin superiorly very long and pointed, the fourth ray the longest; the ventral fins rather small, the third ray longest; the anal anteriorly deepest, the first and second cartilaginous rays rather the longest; caudal fin lunate. Length of specimen described, 23 inches; length of head from anterior extremity of lower jaw to hinder edge of operculum, $6\frac{1}{2}$ inches.

D., $\frac{11}{9}$; P., 16; V., $\frac{1}{5}$; A., $\frac{3}{7}$; C., 19.

Inhabits the seas of the eastern and western coasts of South Africa, and is a very common fish in the Cape market. It is generally caught by means of baited hooks.



CYBIUM FLAVO-BRUNNEUM.

(Pisces_Plate 20.)

CYBIUM FLAVO-BRUNNEUM.—Smith.

Pisces.—Plate XX.

C. capite rubro-brunneo, mandibulæ lateribus tectricibusque branchiarum argentio-lavatis ; corpore flavo-brunneo ; squamis parvis indistinctis ; caudæ carinâ acutâ et distinctâ ; pinnis rubro-brunneis ; pinnis spuriis suprà quinque, infrà quatuor ; pinnâ caudale profundè furcatâ.

Longitudo ab apice mandibulæ ad apicem pinnæ caudalis 24 unc.

Colour.—The body is of a tint intermediate between light chesnut-brown and yellowish brown, faintly and delicately reticulated from the margins of the portion of the small scales, which is uncovered, being faintly semi-pellucid ; the head and the fins deep-reddish brown, the sides of the lower jaw and the surface of gill-coverts with a strong silvery lustre. The lower portion of the sides and the under parts are lighter than the back, and distinctly tinged with flesh-red.

Form, &c.—Figure lengthened and subovate ; dorsal outline slightly curved ; ventral outline considerably arched. Head compressed and conical ; the top of the head nearly level and the under jaw slopped upwards, the latter rather longer than the upper, and at the point is truncated and much deeper than the upper. The margins of the jaws are curved downwards to the angles of the mouth, which are situated directly under the anterior edge of the eyes ; each jaw supports a row of teeth, and there are besides two large fangs curving backwards a little behind the front of the upper jaw on the anterior part of the palate ; the teeth of the upper jaw are very small and cylindrical, about half a line apart, and slightly curved inwards ; those of the under jaw are considerably larger, more apart from each other, and with a like curvature inwards. Nostrils double, small, vertical, and about half an inch apart, the one directly in front of the other, the hindermost nearly half an inch before the anterior and upper edge of the orbit. Orbits large, somewhat circular. Postocular plate distinctly marked with longitudinal *striæ ;* the preoperculum superiorly with vertical *striæ*, inferiorly slightly puckered ; operculum radiated ; infraoperculum smooth, all covered with small somewhat circular scales ; the posterior edge of operculum semicircular and nearly unbroken. The body covered closely with small delicate scales, but indis-

tinctly visible in the fresh fish, though manifest in dried specimens. Tail furnished with a strong sharp keel on each side. The first dorsal fin commences a little behind the pectoral, is low, and the rays are connected by a delicate, nearly colourless membrane; it terminates a little in front of the second, and unless when elevated, is concealed in a groove which runs along the centre of the back. The second dorsal fin anteriorly is rather high, the second, third, and fourth rays being considerably prolonged, posteriorly it is low, and scarcely rising higher than the false fins; the posterior edge of this fin has a falciform appearance. The anal is formed after the manner of the dorsal, and commences a little in front of the hinder extremity of the latter. The pectoral fins are rather long, narrow, and the upper and posterior extremity of each ends in a point. The ventral fins are narrow and of moderate length; the caudal fin is deeply forked and the longest, the outer rays of each portion forming a sharp point. The false fins, five above and four below, are small, and the hindermost rays of each much prolonged.

DIMENSIONS.

	Inches.	Lines.
Distance between the nose and the eye	2	3
from the nose to the commencement of 1st dorsal fin	6	6
from the nose to the 2d dorsal fin	11	2
Distance from the nose to the anal fin	13	6
Length from the nose to the extremity of the caudal fin	24	0

The greatest depth of the body is rather more than one-sixth of the total length.

This fish is now and then caught in the seas about the Cape of Good Hope; but none of the fishermen with whom I conversed had ever known more than two specimens to have been caught in the same season.

PENTACEROS RICHARDSONI.—Smith.

Pisces.—Plate XXI.

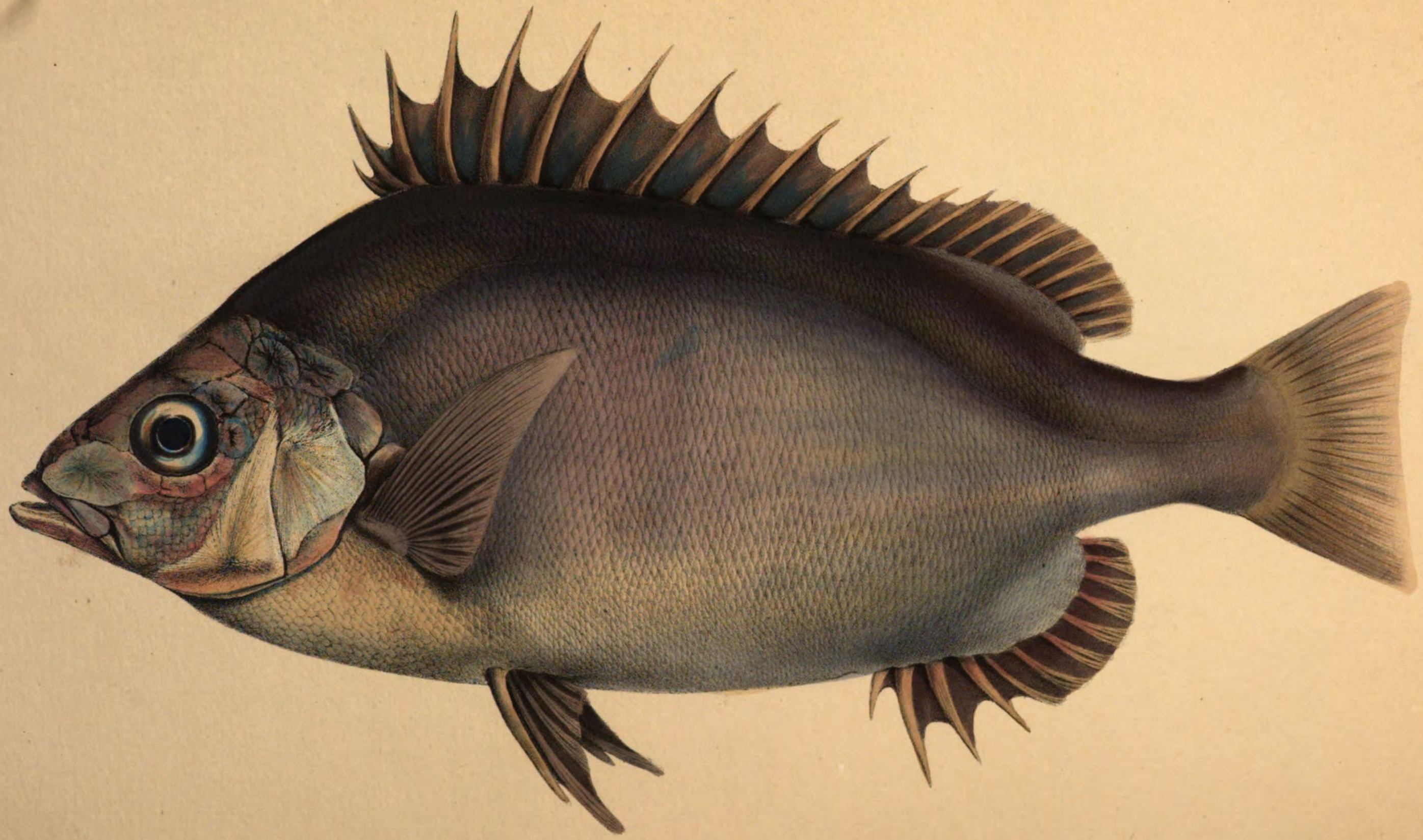
P. capite scabrâ striato; squamis paucis infra oculos; thorace scutis parvis multilateralibus tecto; dentibus criniformibus; spinis pinnarum osseis, fortibus, longitudinaliter striatis; lineâ laterali arcuata.

Longitudo è naso ad apicem caudæ 21 unc.

Colour.—Head above intermediate between wood-brown and aurora-red, which colour is shaded or freckled with brownish red and superiorly variegated with a few narrow waved black veins from the skin which connects the osseous plates being of the latter colour. Sides of head below eyes irregularly mottled lilac-purple and aurora-red, the former colour being most distinct behind the angles of the mouth, posterior to the eyes and on the posterior and upper edge of the operculum. Back and sides over the lateral line intermediate between brownish red and auricula-purple, and faintly glossed with oil-green; sides below the lateral line and the belly yellowish grey freely shaded with light imperial purple. Dorsal fin light reddish brown clouded particularly towards its base with imperial purple, rays aurora-red shaded with brownish-red. Caudal, anal and ventral fins yellowish grey rayed with brownish-red and glossed with purple. Pectoral fins aurora-red striped between the rays with brownish-red. Eyes,—outer portion of iris deep pansy-purple, middle silvery white, and the inner portion blackish brown.

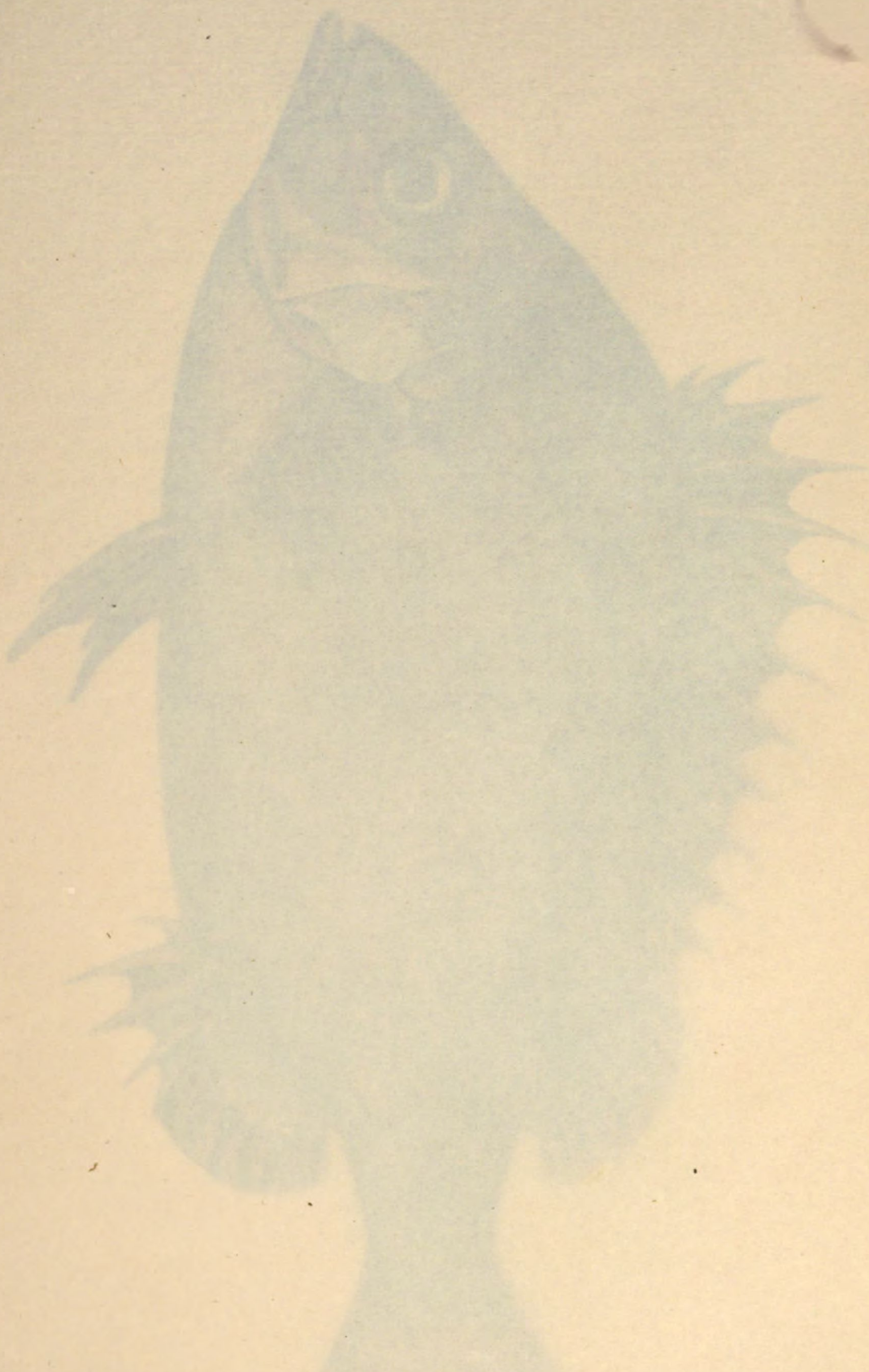
Colour of dried skin.—Head yellowish brown, finely rayed with reddish-brown, back and sides yellowish brown freckled and shaded with umber-brown. Dorsal fin light orange coloured brown, shaded with brownish-red. Caudal fin light yellowish brown, rayed towards apex with brownish-red.

Form, &c.—Body subovate and compressed. Dorsal outline from origin to termination of dorsal fin slightly inclined, anterior to origin very oblique, the facial angle being about 45°. Ventral outline slightly but regularly arched till near the middle of the anal fin, behind that the hinder edge of fin is curved strongly inwards to join the narrow portion of the body which



PENTACEROS RICHARDSONI:

(Pisces—Plate 21.)



PENTACEROS RICHARDSONI.—Smith.

Pisces.—Plate XXI.

P. capite scabrâ striato; squamis paucis infra oculos; thorace scutis parvis multilateralibus tecto; dentibus criniformibus; spinis pinnarum osseis, fortibus, longitudinaliter striatis; lineâ laterali arcuata.

Longitudo è naso ad apicem caudæ 21 unc.

Colour.—Head above intermediate between wood-brown and aurora-red, which colour is shaded or freckled with brownish red and superiorly variegated with a few narrow waved black veins from the skin which connects the osseous plates being of the latter colour. Sides of head below eyes irregularly mottled lilac-purple and aurora-red, the former colour being most distinct behind the angles of the mouth, posterior to the eyes and on the posterior and upper edge of the operculum. Back and sides over the lateral line intermediate between brownish red and auricula-purple, and faintly glossed with oil-green; sides below the lateral line and the belly yellowish grey freely shaded with light imperial purple. Dorsal fin light reddish brown clouded particularly towards its base with imperial purple, rays aurora-red shaded with brownish-red. Caudal, anal and ventral fins yellowish grey rayed with brownish-red and glossed with purple. Pectoral fins aurora-red striped between the rays with brownish-red. Eyes,—outer portion of iris deep pansy-purple, middle silvery white, and the inner portion blackish brown.

Colour of dried skin.—Head yellowish brown, finely rayed with reddish-brown, back and sides yellowish brown freckled and shaded with umber-brown. Dorsal fin light orange coloured brown, shaded with brownish-red. Caudal fin light yellowish brown, rayed towards apex with brownish-red.

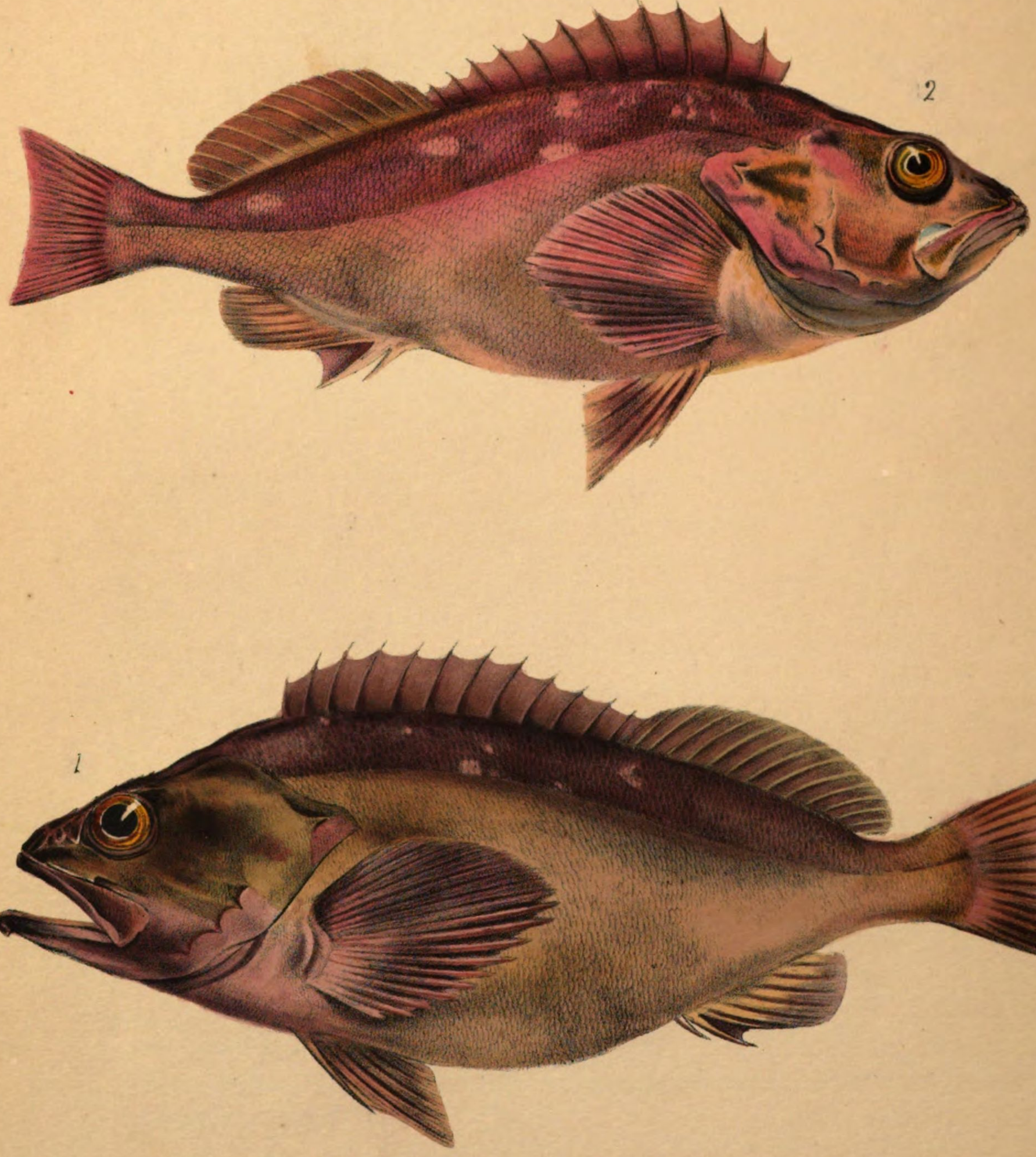
Form, &c.—Body subovate and compressed. Dorsal outline from origin to termination of dorsal fin slightly inclined, anterior to origin very oblique, the facial angle being about 45°. Ventral outline slightly but regularly arched till near the middle of the anal fin, behind that the hinder edge of fin is curved strongly inwards to join the narrow portion of the body which

lies in front of the caudal fin. Head compressed and conical; lower jaw longest; gape small and each jaw has a broad band of short criniform teeth. Nostrils double, the hindermost the largest, and both situated rather nearer to the eye than the nose. Eyes large. Head rather more than one-fourth of the total length of the fish, being $5\frac{1}{2}$ in a specimen measuring 21 inches. The surface of the head between the preoperculum and suborbital plates consists of rather small somewhat circular scales, elsewhere of strong bony plates externally radiated with granular striæ. Shoulder plates radiated in the same manner, the uppermost very coarsely. The under surface of the body in front of ventral fins is flat and formed somewhat like the thorax of an *Ostracion:* behind these fins to anus keeled, and both these parts together with the edge of back between hindhead and origin of dorsal fin covered with hard tubercular or subangular plates, placed side by side like stones in a pavement; the other parts of the body are covered with scales similar to what are found on fishes generally, only they are rather small, as compared with the size of the specimen. Lateral line commences immediately over the second scapular plate, ascends, forming an arch, towards the dorsal fin and on its reaching a point, under the fifth ray, it proceeds parallel with the base of the dorsal fin till near the last spinous ray, where it begins to descend obliquely till it reaches about midway between the termination of the anal and dorsal fins; from thence it proceeds in a straight line to the caudal fin. Dorsal fin very strong anteriorly; the spinous rays very robust, and all longitudinally striated; the fourth, fifth, and sixth rays the longest,—the first much the shortest: the soft portion of dorsal fin very short, and not higher than the lowest portion of the spinous part. Pectoral fin, pointed, the first ray spinous, but short and slender; the fifth ray the longest. Ventral fins small, and the first or spinous ray very large and longitudinally striated. Anal fin with the spinous rays strong, the second the longest, and all striated; the cartilaginous rays shorter than the spinous. Caudal fin posteriorly straight, or the outer rays of each side in the slightest possible degree longer than the middle ones.

D. $\frac{14}{9}$; P. $\frac{1}{16}$; V. $\frac{1}{5}$; A. $\frac{4}{8}$; C. 16.

Length of individual described, 21 inches.

The only specimen of this Fish I have seen, was procured near to Cape Point, and was taken by means of a hook in very deep water.



1. SEBASTES CAPENSIS.
2. SEBASTES MACULATUS.

(Pisces — Plate. 22.)

SEBASTES CAPENSIS.—Cuv. et Vall.

Pisces.—Plate XXII. Fig. 1.

S. ruber, partibus inferioribus pallidè purpureo-tinctis ; capite supernè aculeis duodecim ; preoperculo aculeis quinquè, operculo duobus versus apicem armatis ; pinnâ caudali subfalcata.

Longitudo e naso ad apicem pinnæ caudalis 14 unc.

Scorpæna Capensis, Gmel.
Scorpene Africaine, Lacep. t. iii. p. 266.

Colour.—The upper surface of the head, its sides to the operculum, and the body above the lateral line, a tint intermediate between chesnut-brown and purplish red, which towards the caudal fin passes into light reddish orange. The edges of most of the scales are of a light pearly colour, and in addition to these slight variegations, there occur also a few irregular-shaped flesh-red spots distinctly indicated in the fresh fish. Lower parts of body below lateral line and hinder portion of operculum buff-orange shaded with aurora-red, and towards lateral line faintly clouded with crimson-red ; the point of operculum carmine-red. Lower jaw, lower portion of operculum, space in front of pectoral and ventral fins, and the upper lips intermediate between brownish purple-red and lake-red. Dorsal fin between lake-red and chesnut-brown. Pectoral, ventral, and caudal fins aurora-red, the two first rayed with lake-red only very faintly towards lower part of pectorals, the caudal is rayed with light orange-coloured brown, and tinged with lake-red. Anal fin pale buff-orange rayed with brownish purple-red. Eyes bright brownish orange, with incomplete rings of bright gall-stone yellow and King's-yellow.

Form, &c.—Figure anteriorly bulky, posteriorly rather slender, the body being much tapered towards the caudal fin. Head large posteriorly, and tapered to the snout ; not quite a third of the length of the fish, and superiorly is armed on each side with an irregular row of spines, several of which have their base prolonged horizontally, forming fine sharp heels, best seen in prepared specimens. One of these points occurs immediately inside

of the hindermost nostril, four over the eye, one in front and three behind; and the last, with its lengthened base, is situated more towards the mesial line, and immediately over the base of the uppermost spine of the shoulder. Preoperculum posteriorly with a prominent edge, which is armed with five more or less acute and strong spines; operculum terminated posteriorly by a triangular fleshy point, before which are two spines, the lowermost the smallest. Spines of shoulders two, situated between the point of the uppermost spine of operculum and the last spine of the head. Dorsal outline from origin of dorsal fin to snout strongly arched from the former to caudal fin nearly straight, or with a slight concavity most distinct under the seventh and eight dorsal rays. Ventral outline, from tip of lower jaw to origin of anal fin, rather strongly arched; from latter to caudal fin a gently ascending line. Lateral line nearly parallel to the outline of the back, is slightly raised, and commences above the lowermost shoulder-plate, and terminates midway between the two edges of the base of the caudal fin. Space in front of eyes, upper lip, and lower jaw, without scales, the other parts of the head and body covered with scales; those on the former small and irregular; those on the body moderately large, semicircular; and all, excepting those of the belly, with the posterior edge finely serrated. Dorsal fin rather low, the membranous portion highest, and of the spinous rays the third is the longest. Caudal fin posteriorly subfalcate; pectorals oblong, posteriorly ovate, the rays fleshy, and the eight inferior ones only connected by membrane towards their base. Ventral fins moderately long, the second and third rays longest, the first spinous and strong. Anal fin rather deep; the three first rays spinous, the two first very strong, the third rather slender, removed from second and in close contact with the first cartilaginous ray, which, and the second, are the longest. Eyes rather large. Nostrils double, and close to the upper and anterior edge of orbit, the one in front of the other. Teeth criniform, and forming a narrow band round the inner edge of each jaw.

Adult specimens generally measure about 14 inches in length.

B. 7; D. $\frac{13}{12}$; P. 18; V. $\frac{1}{5}$; A. $\frac{3}{5}$; C. 14.

Inhabits the seas around the Cape of Good Hope, and is caught generally with baited hooks; it is a common fish in the market of Cape Town.

SEBASTES MACULATUS.—Cuv. et Vall.

PISCES.—PLATE XXII. FIG. 2.

S. subruber; capite supernè aculeis duodecim; preoperculo aculeis quinquè, operculo duobus armatis; rostro lato rotundato; ore magno; pinnæ analis aculeo secundo fortissimo.

LONGITUDO e naso ad apicem pinnæ caudalis 14 ad 16 unc.

COLOUR.—The upper parts of the head and the body above the lateral line a tint intermediate between light carmine-red and tile-red, the former and the anterior portion of the latter shaded with brownish red, the posterior portion mottled with shades of Dutch-orange, and moreover marked with a few irregular-shaped spots of flesh-red. Sides of the head and the body below the lateral line dull flesh red, clouded with varying tints of lilac-purple and Dutch-orange; the belly distinctly tinged with yellow. Lower jaw and operculum inferiorly flesh-red shaded with lavender-purple; upper lip dull orpiment-orange. Dorsal fin close to base intermediate between tile-red and blood-red, towards upper edge light tile-red; the very base of the membranous portion pale buff-orange; caudal, pectoral and ventral fins flesh-red rayed with lake-red; anal fin pale buff-orange rayed and shaded with lake-red. Eyes light gall-stone yellow, variegated with incomplete rings of tile-red and pearl-grey.

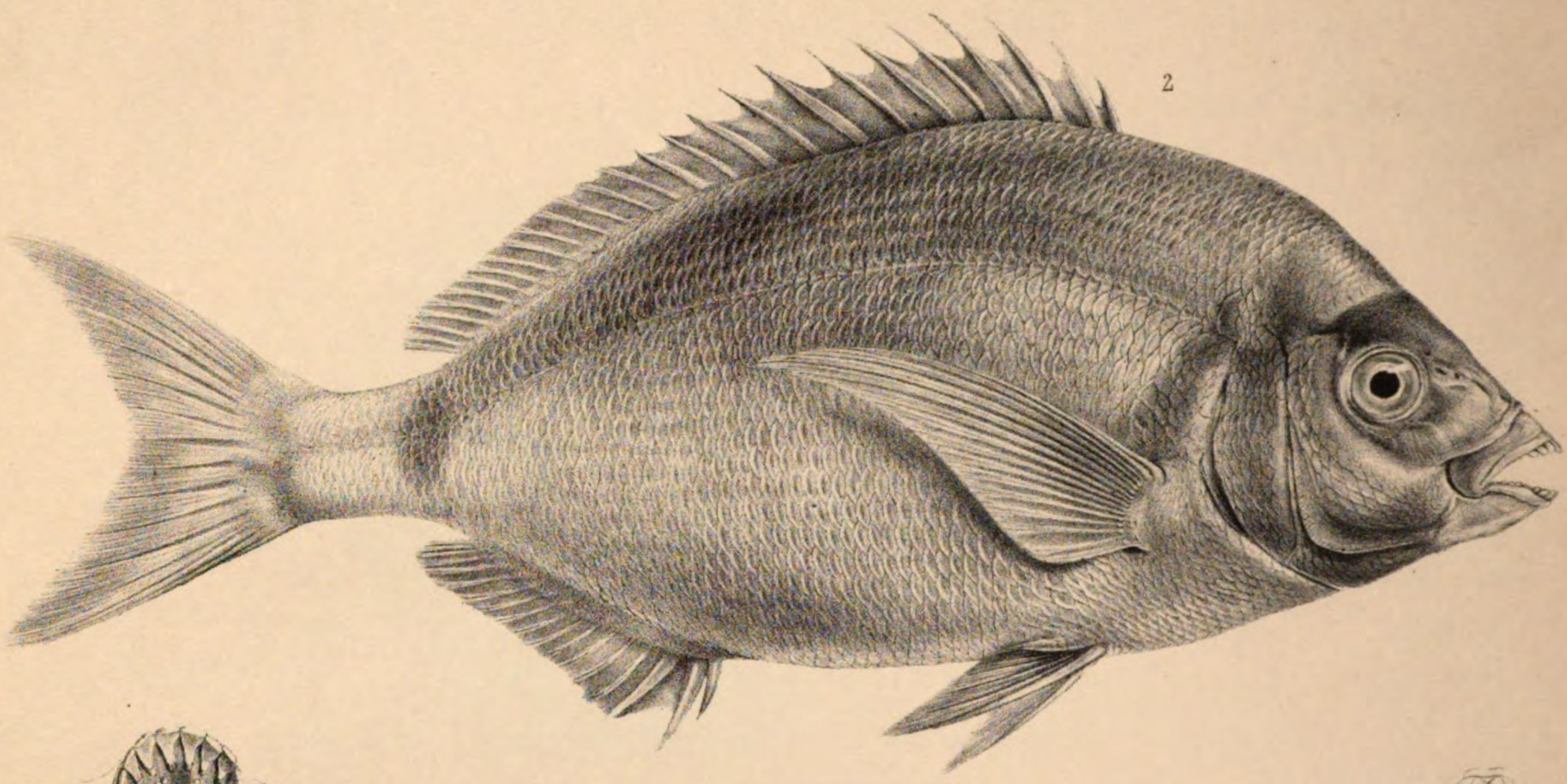
FORM, &c.—Figure anteriorly bulky, the belly pendant. Head about one-third of the length of the fish, and superiorly armed on each side with the same number of spines and cutting ridges as *Sebastes Capensis*, only both are more developed. Preoperculum with five strong triangular and pointed spines; operculum with two lengthened spines about half an inch in front of its fleshy triangular point, the uppermost the most conspicuous. Distance between the eyes greater than in *Sebastes Capensis*, and the breadth of its nose and the width of its gape also much greater. Nostrils double, one in front of the other; teeth criniform and arranged in the form of a narrow band around the inner edge of each jaw. Eyes large and projecting considerably in advance of the orbits. Lateral line slightly undulated and nearly

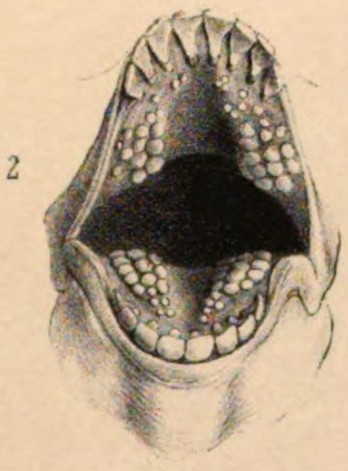
parallel with the outline of the back. Dorsal outline but slightly arched; ventral outline more strongly. Space in front of eyes, outer surface of lips, and lower jaws smooth, the other parts of the head covered with small irregular scales; scales of body considerably larger, and have their hinder edge finely serrated. The dorsal fin commences directly over the base of the pectoral, and its membranous portion is much higher than the spinous portion. Pectoral fins oblong, ovate, the rays, particularly of the lower portion of the fin, full, fleshy, and not connected by membrane towards their points. Ventral fins small, the first ray strong and spinous. Anal fin with three spinous rays, the second very strong and of the same length as the third; cartilaginous rays considerably longer. Caudal fin slightly sub-falcate.

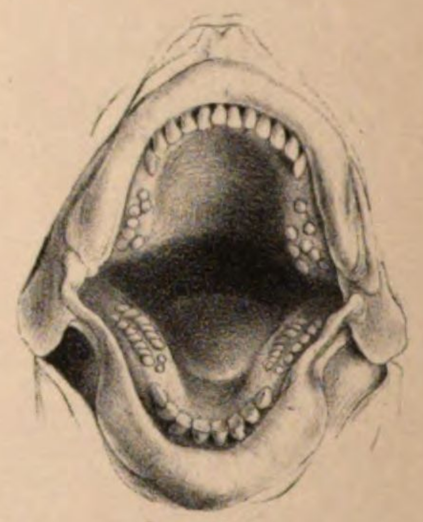
B. 7; D. $\frac{13}{13}$; P. 18; V. $\frac{1}{5}$; A. $\frac{3}{6}$; C. 14.

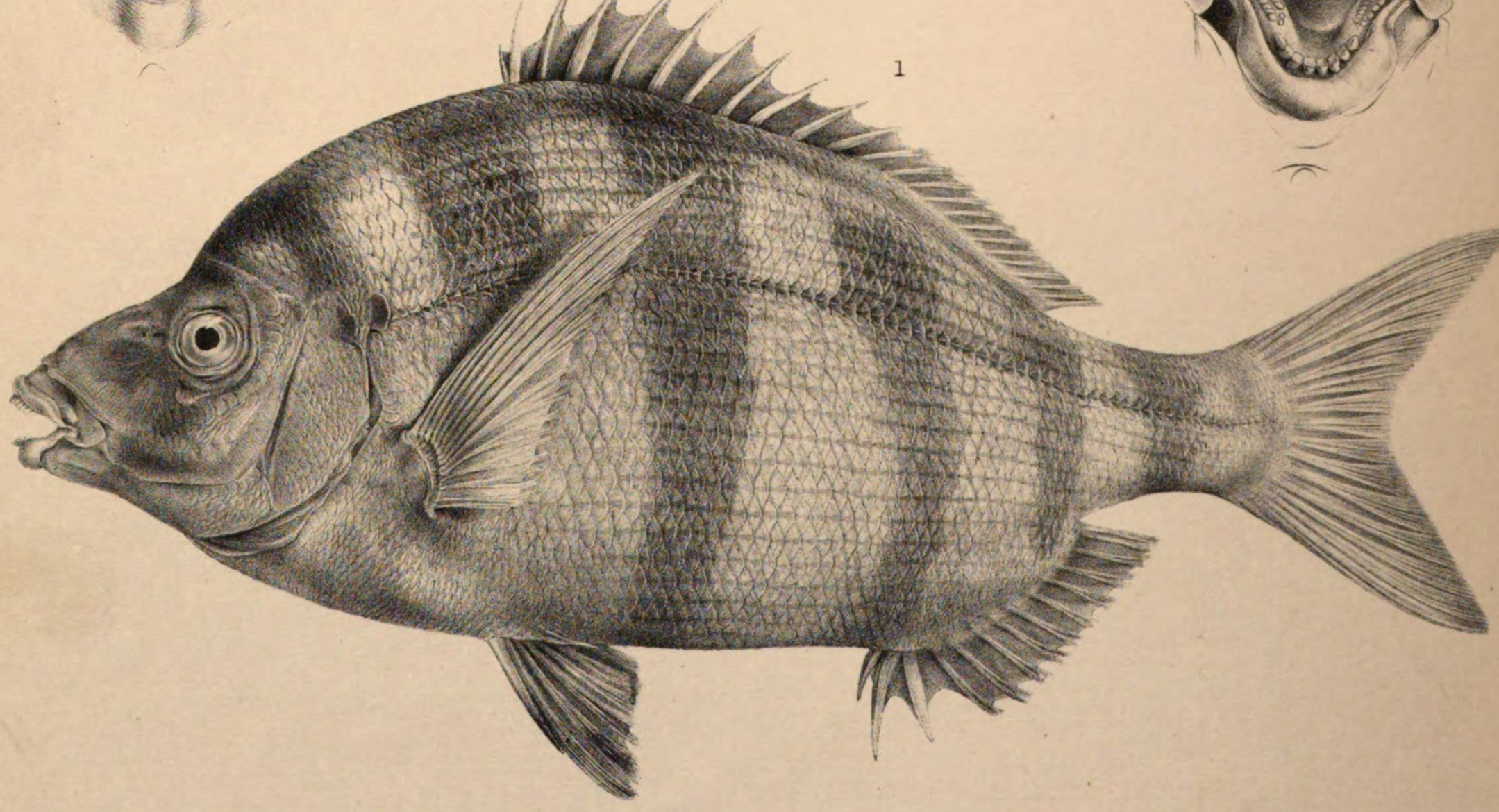
Length of adult specimens from 14 to 16 inches.

This species, which in common with *Sebastes Capensis* inhabits the seas of the Cape of Good Hope, is readily to be distinguished from the latter by the much greater breadth of its head and nose, by the greater width of its gape, by its protruding eyes, by the great size of the two spinous rays of the anal fin, and also by its profile being less oblique.



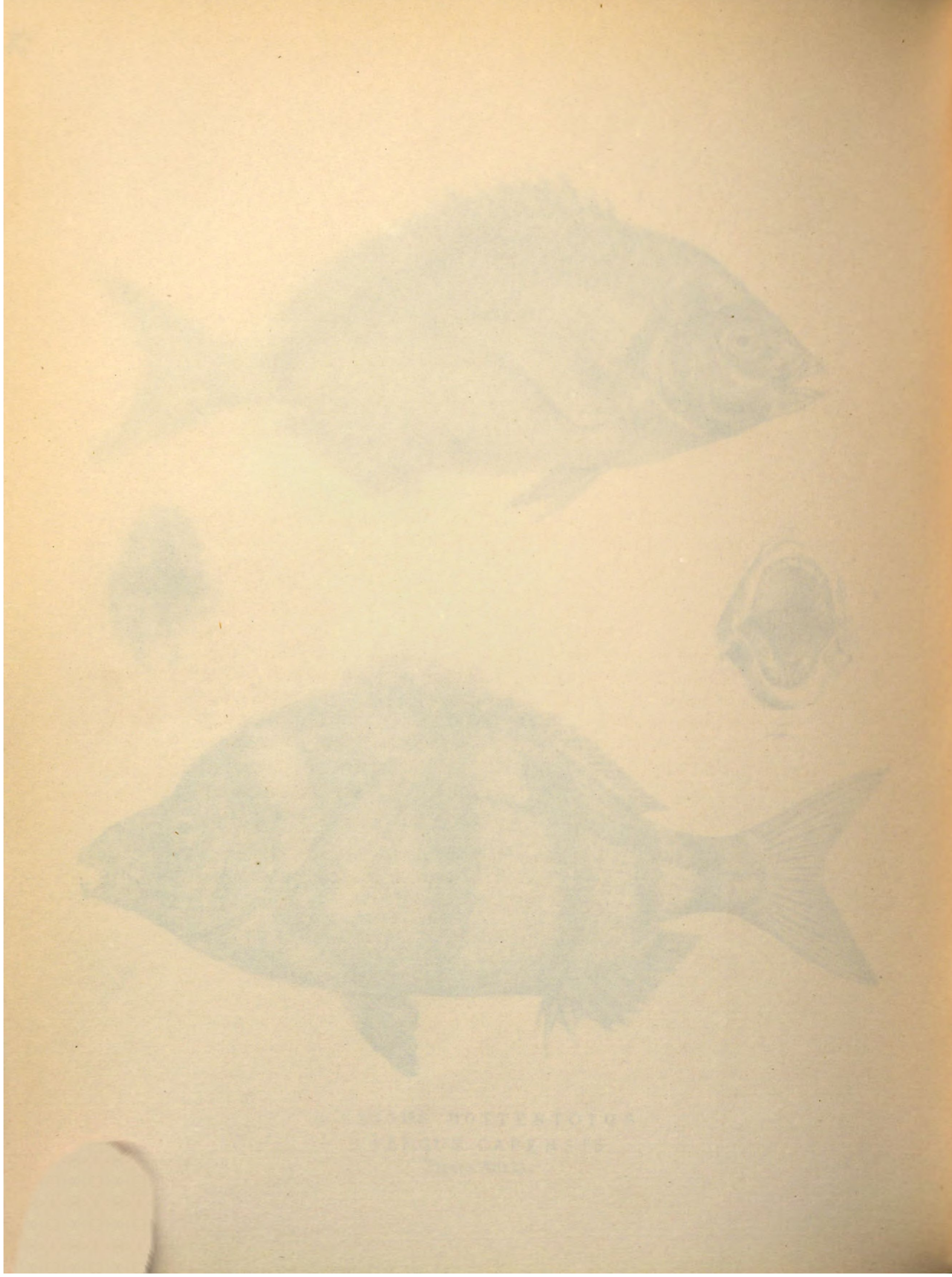






1. SARGUS HOTTENTOTUS.
2. SARGUS CAPENSIS.

Pisces, Plate 23.



SARGUS HOTTENTOTUS.—Smith.

Pisces.—Plate XXIII. Fig. 1.

S. corpore fasciis quinque verticalibus variegatis; maxillæ dentibus incisoribus duodicem, mandibulæ octo; pinnis ventralibus postice subarcuatis; pinnâ caudali furcata.

Longitudo e naso ad extremitatem pinnæ caudalis 17 unc. 6 lin.

Colour.—The upper and lateral parts of the head blackish purple, tinted with auricula and plum-purple; interoperculum and lower surface of under-jaw verging on plum-purple. The back and sides superiorly faintly striped, longitudinally blackish purple and lilac-brown; sides inferiorly and belly silvery white, the scales narrowly edged with greenish brown. The body, besides being thus marked, is also crossed by five vertical broad greenish black bands, the first extending between the commencement of the dorsal fin and the origin of the ventrals, and the last about midway between the dorsal and caudal fins. Dorsal fin brownish purple, the rays lightest; pectoral fins pale greenish brown; ventrals brownish green, and the anal and caudal light reddish brown with tints of purple. Eyes white, with dashes of coppery green. Lips reddish white.

Colour of Dried Skin.—Top of the head chesnut-brown, glossed with oil-green; the sides of the head and the entire of the body greenish white, and the vertical bands which continue distinct are brownish red. Dorsal fin light purplish brown, the spines greenish white.

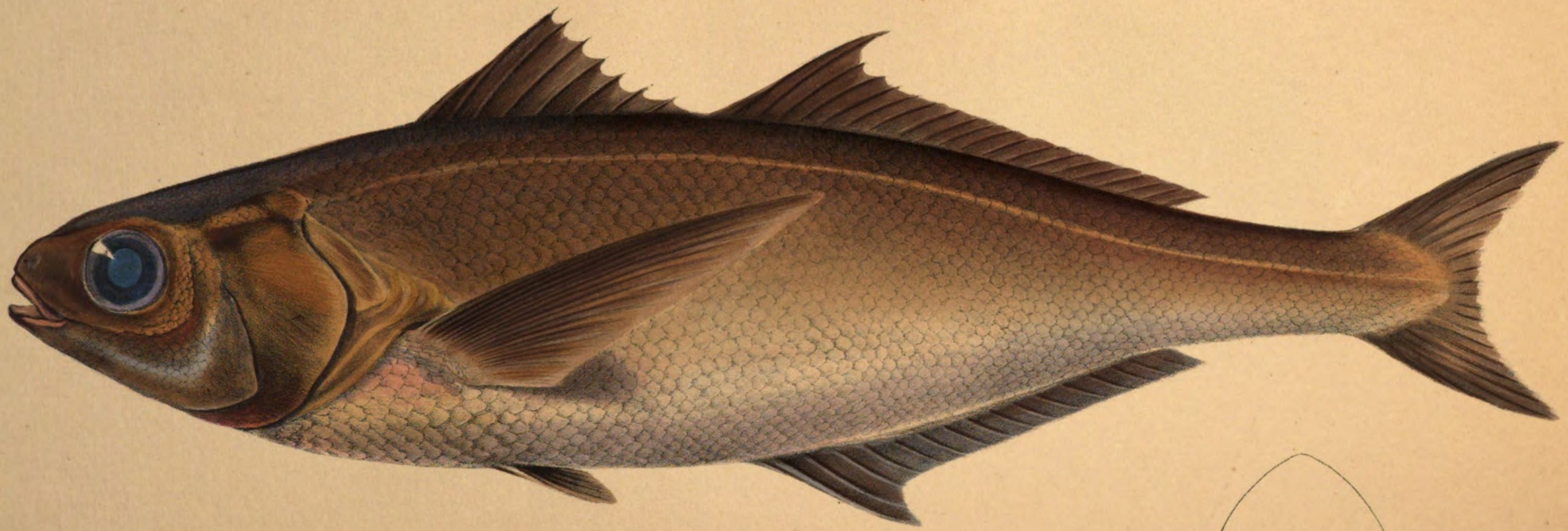
Form, &c.—Figure subovate; head small, anteriorly pointed, and about one-fourth of the length of the fish. Superior outline, in front of dorsal fin, strongly arched, posteriorly to its commencement slightly inclined towards the tail. Ventral outline throughout slightly arched; the inter-maxillary bones admit of being projected considerably forwards, and when they are so circumstanced there is a considerable hollow in the profile immediately over the eyes, as is to be seen in the figure: when they are otherwise the slope is regular and continuous. Lips very thick, pulpy and villose. Incisor teeth of upper jaw twelve in number, closely set, rather narrow,

cutting, and the base or neck of each, as seen on looking into the mouth, is lengthened, narrow, and laterally compressed. *Molars* in both jaws sub-hemispherical, varying in size, and arranged in two or three irregular rows. In the upper jaw, besides the molars, there exists also externally to them a narrow band of short filamentary teeth. Scapulary scale large and semi-circular, Lateral line slightly and regularly curved; it commences at the upper extremity of the operculum, and terminates near the middle of the caudal fin, and towards and on the latter consists of short, slender, simple tubes. Preoperculum excepting towards its margin, operculum and inter-operculum covered with scales, the other parts of head smooth and without scales; the scales of preoperculum sub-quadrangular, and disposed in arched rows, the convexity of which is downwards and backwards. Scales covering the body large, somewhat six-sided; those towards the back in rows extending obliquely from before backwards towards the belly in nearly vertical rows. Scales on base of fins small and irregularly shaped. Dorsal fin arched, the sixth spinous ray the longest, the first about half the length of the second; the cartilaginous rays nearly of equal length, and shorter than the spinous ones. Anal fin slightly arched, the second and third spiny rays nearly of equal length and longest, the third the strongest. Pectoral fins long, the fourth ray the longest; ventral fins rather long and pointed, the first soft ray being much longer than the innermost one. Caudal fin deeply forked, the upper and under extremes very pointed. Length from nose to commencement of dorsal fin 5 inches 2 lines, to pectoral fin 4 inches; the base of ventrals directly under the commencement of the dorsal fin. Length from nose to middle of hinder edge of caudal fin 14 inches.

B. 7; D. $\frac{12}{13}$; P. 16; V. $\frac{1}{5}$; A. $\frac{3}{14}$; C. 19.

Found in the same localities with *S. Hottentotus,* and consumes the same description of food.

The shape of the scales below the eyes, the length of the ventral fins, the smaller number of incisor teeth and the greater number of molars, together with many other minor differences, constitute characters by which this species is readily to be distinguished from *S. Hottentotus.*



ATIMOSTOMA CAPENSIS
(Pisces Plate 24)

ATIMOSTOMA* CAPENSIS.—Smith.

PISCES.—PLATE XXIV.

Sp. char. Fusco-brunnea, castaneo-tincta; subtus pallide flavo-brunnea, cinereo tincta; series dorsalibus cruciformibus lævibus; pinnis pectoralibus prolongis; squamis magnis, subovatis.

Hab. Caput a naso apicem ad extremitatem plicæ caudalis 45 unc.

COLOUR.—The upper and lateral parts of the head, the back, and the upper portions of the sides intermediate between buff-orange and yellowish brown, here and there with tints of chesnut-brown; the preoperculum in places tinged with purple; the lower parts of the sides and the under parts of the head and body wood-brown, tinted lightly with plum-purple. The dorsal, anal, and caudal fins orange-coloured brown, dotted with brownish red; pectoral fins intermediate between chesnut-brown and yellowish brown.

FORM, &c.—Body oblong ovate, and immediately before the caudal fin very slender, the greatest depth of the body is directly under the first dorsal fin. The dorsal and ventral outlines are slightly curved, the curvature of the former being greatest, and its highest point about the commencement of the first dorsal. Head short and compressed; snout full and blunt, the nostrils double, and situated on its sides close to its point, the hindermost is rather large, circular, and directed outwards, the other is very small and directed forwards, and both are nearly on the same horizontal line with the upper edge of the orbit. The upper jaw is rather shorter than the lower, and anteriorly truncated; the lower is narrow, and slightly rounded at the point. Teeth short, cruciform, and arranged in narrow transverse bands,—one along the anterior edge of each jaw. Preoperculum triangular; operculum semicircular; interoperculum narrow: all soft and pliant. Scapulary and humeral plates large, the hinder extremity of the latter terminating in the axilla of the pectoral fin.

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* *Char. Gen.*—Body oblong, ovate, and furnished with two dorsal fins, the hindermost very long, as in *Scirtes*; anal fin formed like the second dorsal; mouth small, each jaw with a narrow belt of cruciform teeth; nostrils double, and situated near to the apex of snout. Scales of body large, thin, and very pliant.

ATIMOSTOMA* CAPENSIS.—Smith.

Pisces.—Plate XXIV.

A. supernè flavo-brunnea, castaneo-tincta; subtus pallidè flavo-brunnea cinnereo tincta; ore parvo; dentibus criniformibus brevibus; pinnis pectoralibus prælongis; squamis magnis, subovatis.

Longitudo e nasi apicè ad extremitatem pinnæ caudalis 42 unc.

Colour.—The upper and lateral parts of the head, the back, and the upper portions of the sides intermediate between buff-orange and yellowish brown, here and there with tints of chesnut-brown; the preoperculum in places tinged with purple; the lower parts of the sides and the under parts of the head and body wood-brown, tinted lightly with plum-purple. The dorsal, anal, and caudal fins orange-coloured brown, dulled with brownish red; pectoral fins intermediate between chesnut-brown and yellowish brown.

Form, &c.—Body oblong ovate, and immediately before the caudal fin very slender, the greatest depth of the body is directly under the first dorsal fin. The dorsal and ventral outlines are slightly curved, the curvature of the former being greatest, and its highest point about the commencement of the first dorsal. Head short and compressed; snout full and blunt, the nostrils double, and situated on its sides close to its point, the hindermost is rather large, circular, and directed outwards, the other is very small and directed forwards, and both are nearly on the same horizontal line with the upper edge of the orbit. The upper jaw is rather shorter than the lower, and anteriorly truncated; the lower is narrow, and slightly rounded at the point. Teeth short, criniform, and arranged in narrow transverse bands,—one along the anterior edge of each jaw. Preoperculum triangular; operculum semicircular; interoperculum narrow: all soft and pliant. Scapulary and humeral plates large, the hinder extremity of the latter terminating in the axilla of the pectoral fin.

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* *Char. Gen.*—Body oblong, ovate, and furnished with two dorsal fins, the hindermost very long, as in *Seriola*; anal fin formed like the second dorsal; mouth small, each jaw with a narrow belt of criniform teeth; nostrils double, and situated near to the apex of snout. Scales of body large, thin, and very pliant.

The first dorsal fin commences immediately over the hinder extremity of the humeral plates, and a little behind the point of attachment of the pectoral fin; the anterior rays, viz. the second, third, and fourth are much the longest, the last ray, which is close to the first of the second dorsal is scarcely visible. The first ray of the second dorsal is longest, next to it the second, third, and fourth, which are nearly of equal length, and considerably longer than the remaining rays. Pectoral fin rather narrow and very long, the sixth ray the longest, and the entire fish is exactly three and a half times its length. The ventral fins are small and short. The anal fin is a little shorter than the second dorsal and similarly shaped. The caudal is deeply lunated, the extremities rather pointed.

The head, with the exception of the space immediately behind the posterior edge of the orbit, smooth and without scales; the back, sides, and under parts covered with large, very pliant, somewhat ovate scales, the hinder edge of each generally more or less jagged and irregular. The lateral line commences a little below the upper extremity of the operculum, and terminates at the base of the caudal fin.

DIMENSIONS.

	In.	Lin.		In.	Lin.
From the tip of the snout to the anterior edge of the orbit.....	2	6	From the tip of the snout to the base of the pectoral fin.....	11	3
of the snout to the hinder edge of the operculum ..	10	9	Length of the 2nd dorsal fin.....	11	6
of the snout to the commencement of the 1st dorsal fin	12	9	of the pectoral fin	12	0
			of the anal fin	9	9
			Total length of fish	36	0

This fish will take its place in the fourth tribe of the *Scomberidae* of Cuvier; characterised by the want of spurious finlets, or free spines on the back, and of keeled scales on the tail.

It differs from the several forms which have already been referred to the tribe in various respects, but in none more than in the size of its scales, and in the universal and regular manner in which they are placed upon the body and tail. The form of the head is somewhat similar to that of *Nomeus Mauritii;* the second dorsal and anal fins are like those of the more typical species of the second, third, and fourth tribes, and the pectoral fins have their representatives in all the four divisions; but in the first they are comparatively few.

The specimen described, the only one I have seen, was found on the beach, to the northward of Cape Town, after a heavy gale of wind. It was partially decayed before it was discovered, hence some of the more interesting characters could not be ascertained.

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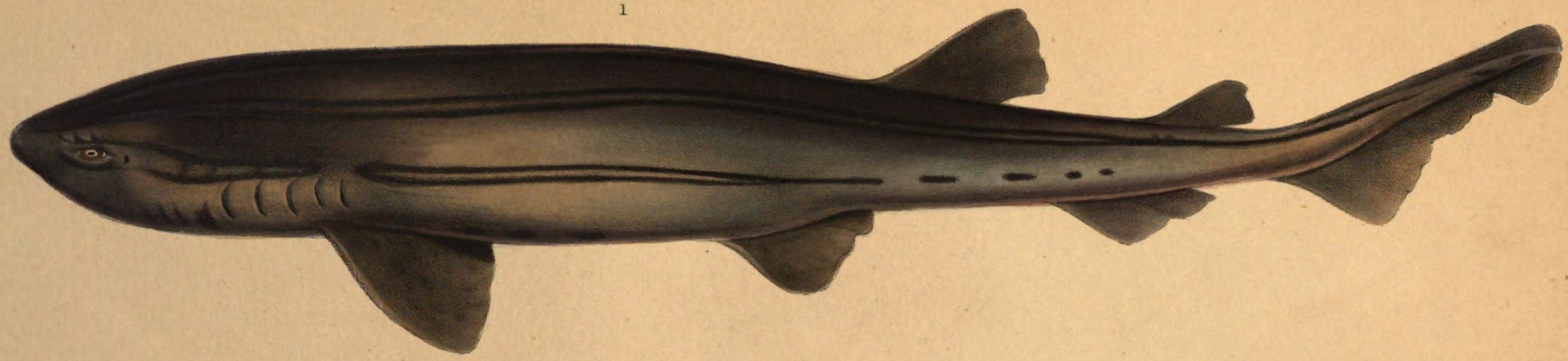

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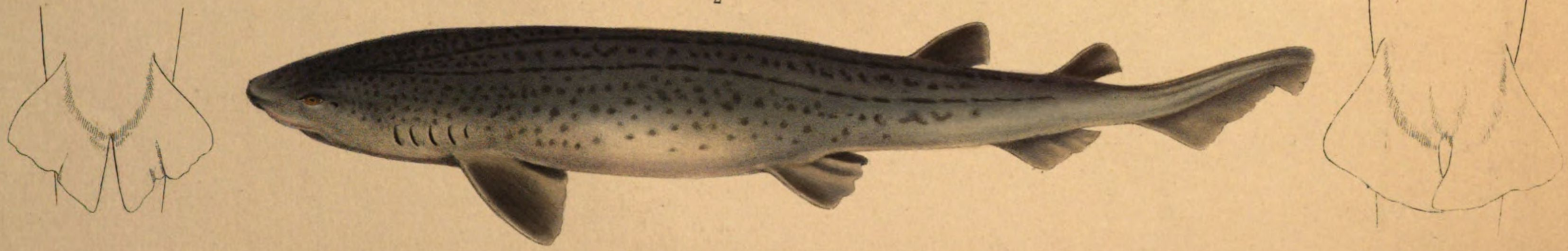

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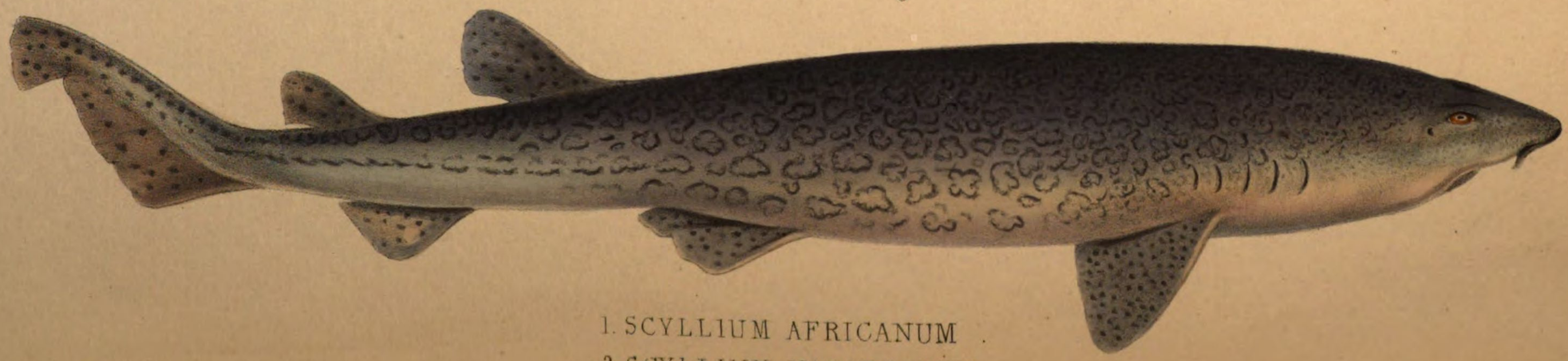


1. SCYLLIUM AFRICANUM .
2. SCYLLIUM VARIEGATUM.
3. SCYLLIUM PANTHERINUM.

Pices_Plate 25.

SCYLLIUM AFRICANUM.—Auct.

PISCES.—PLATE XXV. FIG. 1. (FEMALE.)

S. superne purpureo-griseum, nigro-purpureo tinctum et fasciis nigro brunneis longitudinalibus septem variegatum, quarum tribus e nasi apice incepientibus; cirris brevibus, ante marginem labii superioris desinentibus.

SQUALUS AFRICANUS, Lin., 1494. 20.
SQUALUS VITTATUS, Shaw, Nat. Misc. Pl. 346.
SQUALE GALONNE, Læeep. 1. 254.
SCYLLIUM AFRICANUM, Cuv. Reg. Animal, 2. 386.

COLOUR.—The upper and lateral parts of the head, the back, and the sides, lavender-purple, tinted with a colour intermediate between blackish purple and brownish purple red. The back and sides are, in addition to the tints just specified, further variegated with seven longitudinal blackish brown stripes generally single, but sometimes, as in the specimen represented, double; three of the stripes originate at the apex of the snout, one at each eye, and one immediately behind the last branchial opening. The fins are of the same colour as the back, the tint towards their base a little darker. The under parts are pale brownish purple red, slightly clouded, especially towards the throat and base of pectoral fins, with vermilion red. Eyes light reddish orange, with a bronze lustre.

FORM.—Head and anterior portion of body robust, posterior portion slender; the back anteriorly broad and slightly convex, posteriorly compressed and subcarinated. Eyes directly over the angles of the mouth; the temporal spiracle is rather large, almost circular, and situated a little behind and below the posterior junction of the eyelids. Snout rather narrow, and its apex rounded. Nostrils large, and immediately in front of the upper lip; the external half of each oblique, the internal half transverse, and the one portion is divided from the other by the cirrus, which originates from the anterior edge of the nostrils, extends across the opening, and terminates considerably anterior to the edge of the upper lip. Besides the regular cirrus, there is at its base externally a sort of rudimentary one, consisting of a slightly triangular elongation of a portion of the anterior edge of each nostril.

SCYLLIUM AFRICANUM.

Upper jaw semielliptic. Teeth of both jaws closely set, arranged in several transverse rows, and each tooth tridentate; the lateral teeth very small. Branchial openings semilunar, the first the longest, the last the shortest, the lower extremity of the third slightly in advance of the base of pectoral fin. Pectoral fins triangular, the outer side considerably the longest, the hinder side nearly truncated, and forms almost a right angle with the body. The edge of ventral fins posteriorly oblique, the hinder and inner angle prolonged and slightly rounded, the hinder and outer much rounded; the base of the anal fin equal in measurement to three times and a half its depth. The skin is densely coated with minute tridentate horny scales, which are placed nearly perpendicular to its surface, are very closely set, and have their points inclined slightly backwards; hence feel very harsh to the hand when moved from behind forwards. In young specimens the points are but little blunted from friction, hence in them the asperity is most distinct.

DIMENSIONS.

	In.	Lin.
From the tip of the snout to the angle of the mouth	2	8
of the gape	2	3
of the nose to the centre of the upper lip	1	3½
of the nose to the anterior angle of the eye	1	11
of the nose to the base of the pectoral fin	7	3
From the tip of the nose to the base of the 1st dorsal fin	20	0
of the 2nd dorsal fin	28	0
From base of 2nd dorsal fin to tip of caudal fin	8	2
to tip of caudal fin	6	11
Total length	36	6

Male.—Colours generally, the same as those of the *female;* body less bulky.

This species abounds in the South African seas, and is known among the fishermen by the name of *lui haai* (lazy shark), an appellation it has obtained from its extreme disinclination to move from its resting place, even when danger threatens it. It resorts to the bottom of the sea for its food, which consists of shell fish, crustacea, &c.; and it is often to be seen, where the water is not very deep, languidly detaching limpets, &c., from the rocks to which they may be adherent.

The extent of nostril, internal to the cirrus, and the shortness of the latter, constitute characters by which this species is readily to be distinguished from *S. Pantherinum* and *Variegatum*.

SCYLLIUM VARIEGATUM.—Smith.

Pisces.—Plate XXV. Fig. 2. (Female.)

S. superne purpureo-griseum maculis fasciisque nigro brunneis variegatum ; subtus flavo-griseum carneo-tinctum ; cirris ultrà labii superioris marginem porrectis.

Colour.—The upper surface of the head, the back and the sides superiorly lavender-purple, tinted with blackish purple, and variegated with a profusion of small spots and some narrow longitudinal stripes of a blackish brown colour ; the latter in some specimens continuous, in others broken, and resembling strings of beads. The stripes are generally two in number on each side, arise from the same point immediately over the eye ; and from thence, as they proceed backwards, they diverge slightly, so that where they terminate, under the base of the second dorsal fin, they are commonly about three-quarters of an inch apart. Lower portion of sides and under parts of head and body yellowish grey, with a flesh-red tint. Eyes brownish green, with a bronze lustre.

Form, &c.—Figure rather slender ; the head superiorly, nearly flat, laterally, tapered towards the point of the snout, which is slightly rounded. The hinder angle of the eye is directly over the angle of the mouth ; the temporal spiracle is a little behind and below the angle of the eye, and rather smaller than that of *S. Pantherinum*. The upper jaw is considerably curved, and the teeth of both jaws, like those of *S. Africanum*. Nostrils nearly transverse, and in a great measure external of the cirri ; the latter are rather slender, and each is edged, externally and internally, at its base, with a narrow cuticular fold, and immediately external to the outer fold there is a narrow portion of skin so projecting as to form a sort of second cirrus to each nostril. The principal or internal cirrus extends directly backwards, and its tip projects a little behind the edges of the upper lip. The caudal fin is

exactly one-fifth of the length of the entire fish; the base of the anal fin is equal in point of measurement to three times its depth.

DIMENSIONS.

	In.	Lin.
From the tip of the nose to the angle of the mouth	1	10
Breadth of the gape	1	9
From the tip of the nose to the centre of the upper lip	0	10
of the nose to the anterior angle of the eye	1	1
of the nose to the base of the pectoral fin	4	6
From the tip of the nose to the base of the first dorsal fin	14	6
of the nose to the base of the 2nd dorsal fin	17	9
From base of 2nd dorsal to the tip of the caudal fin	5	11
From the base to the tip of the caudal fin	4	0
Total length of fish	23	6

Male.—Colour and markings not known.

The only specimen of the species I have yet seen was caught in Algoa Bay, and when it was shown to the fishermen it was recognized by them as a rare fish. The length of the *cirri*, and the nonextension of the nostrils internally of their base, form characters by which this species is readily to be distinguished from *Scyllium Africanum*. The differences between it and *Scyllium Pantherinum* are, on the other hand, rather obscure, and consist more in a multitude of little discrepancies than in any of a very manifest description. The characters of the markings, in the first place, are different; in *S. Pantherinum* no regular stripes are ever observed; in *S. variegatum* again stripes are observed, but neither rings nor tortuous figures like those always exhibited by the former. The dorsal, anal, and caudal fins of *S. variegatum* are larger in proportion than those of *S. Pantherinum*, and the hinder edge of the ventral fins more oblique. The figure of the latter species is also less robust.

SCYLLIUM PANTHERINUM.—Smith.

Pisces.—Plate XXV. Fig. 3.—Female.

S. superne purpureo-griseum, capite pinnisque maculis parvis, nigro-brunneis variegatis; dorso-lateribusque annulis, figuribusque linearibus contortis notatis; cirris ad maxillæ marginem posteriorem attingentibus.

Colour.—The upper and lateral parts of the head, the back, the sides superiorly, the dorsal fins and the upper surface of the pectoral fins a tint intermediate between lavender-purple and brownish purple red, the dorsal and pectoral fins with the reddish or flesh tinge strongest. The sides of the head inferiorly, the under parts of the body, and the anal and caudal fins yellowish grey, faintly tinted with flesh red. The upper and lateral parts of the head, the upper surface of the pectoral and ventral fins, and the lateral surfaces of the dorsal, anal, and caudal fins freely speckled with small blackish brown spots, on the head and pectoral fins very numerous and closely set. Back and sides variegated with brownish black rings scattered among a variety of other figures, consisting of highly contorted lines of the same dark colour, some of them approaching the figures of the letters E C and S: on the middle of the back the markings are smallest, most numerous, and most closely set; on the sides they are much larger, and more distant from each other.

Form, &c.—Body anteriorly rather robust, posteriorly slender. Head slightly depressed and tapered to the point of the snout, the latter narrow, and slightly rounded; temporal spiracle rather large, subovate, and a little behind the outer angle of the eyelids; nostrils waved, and the inner extremity of each concealed by a long, slender, and compressed *cirrus*, which internally, towards its base, is narrowly edged with a fold of thin skin. External to its base there is a slightly pointed cuticular prolongation from the anterior edging of the nostril, which forms a sort of rudimentary cirrus. The first described, or true cirrus, is posteriorly pointed, and extends backwards as far as the hinder edge of the upper lip. Mouth semi-lunar, and the teeth, which are disposed in transverse rows, are small, slightly curved, and tridentate. The anterior extremity of base of pectoral fin directly under

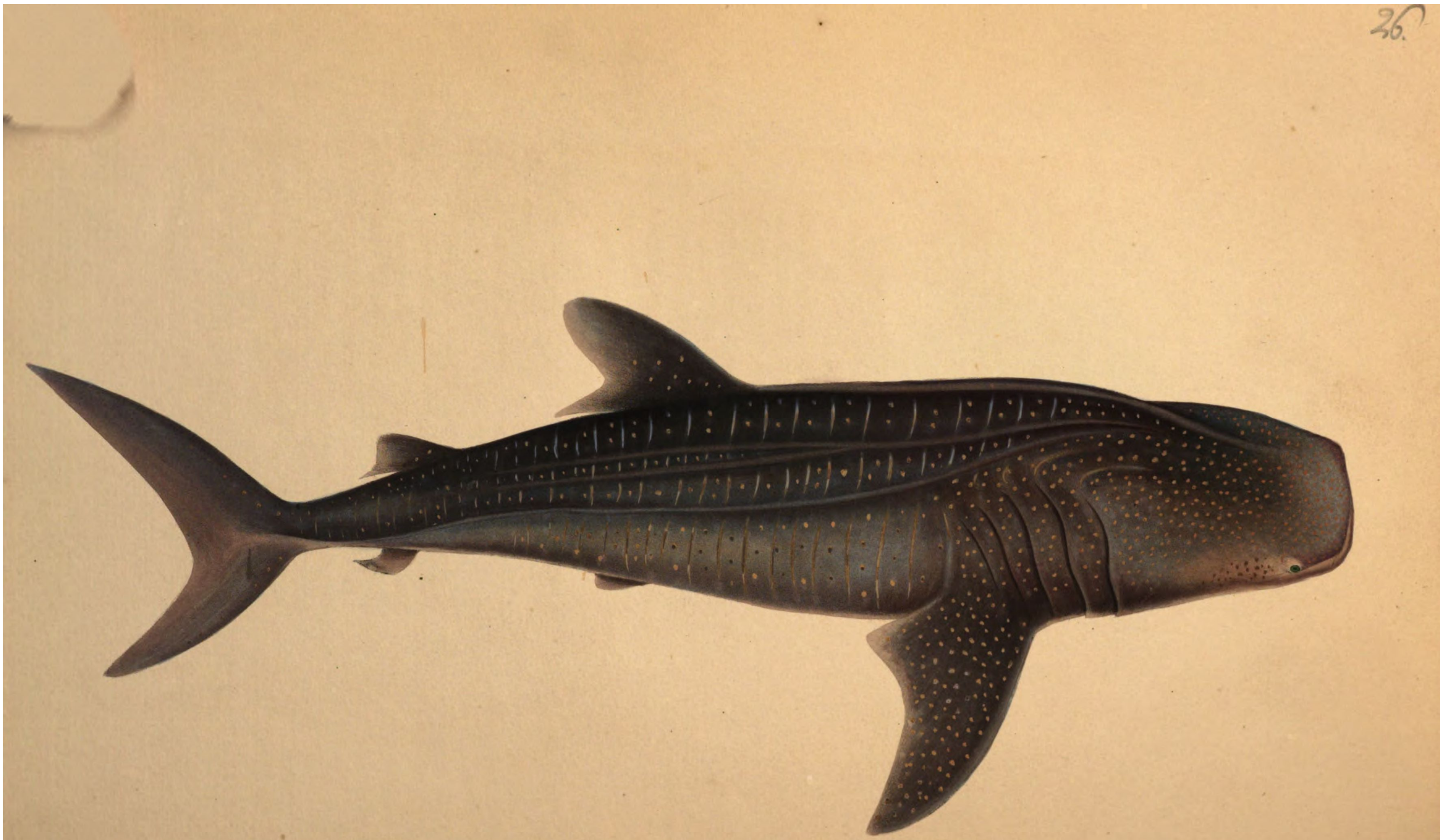
the fourth branchial opening; the external and posterior sides of ventral fins nearly of equal length, the edge of the latter slightly oblique, the outer angle much rounded, the inner subacute; anterior edge of dorsal fin slightly arched; the base of anal in length equal to twice its depth. Skin covered with scales like those of *Scyllium Africanum*.

DIMENSIONS.

	In.	Lin.
From the tip of the snout to the angle of the mouth	2	3
Breadth of the gape	2	0½
From the tip of the snout to the centre of the upper jaw	1	0½
of the snout to the anterior angle of the eye	1	3½
From the tip of the snout to the base of the pectoral fin	5	7½
of the snout to the base of the 1st dorsal fin	15	0
,, of the 2nd dorsal fin	19	0
From the base to the tip of the caud fin	4	3
Total length of fish	25	6

Male. Colours not known.

Specimens of this species are occasionally procured from the sea which washes the eastern coast of South Africa, and the few individuals I have seen were all taken in the neighbourhood of Algoa Bay. The peculiar and beautiful markings of this species furnish characters by which it is to be readily distinguished from *S. Africanum*. In addition to colour, however, there are other discrepancies; the greater proportional depth of the anal fin as compared with the length of its base; the difference in the shape of the anterior edge of the first dorsal fin, the greater length of the cirri, and each crossing the inner extremity of the nostril, instead of nearly midway between its extremities, as happens in *Scyllium Africanum*.



RHINODON TYPICUS.

Pisces_Plate 26

RHINODON TYPICUS.—Smith.

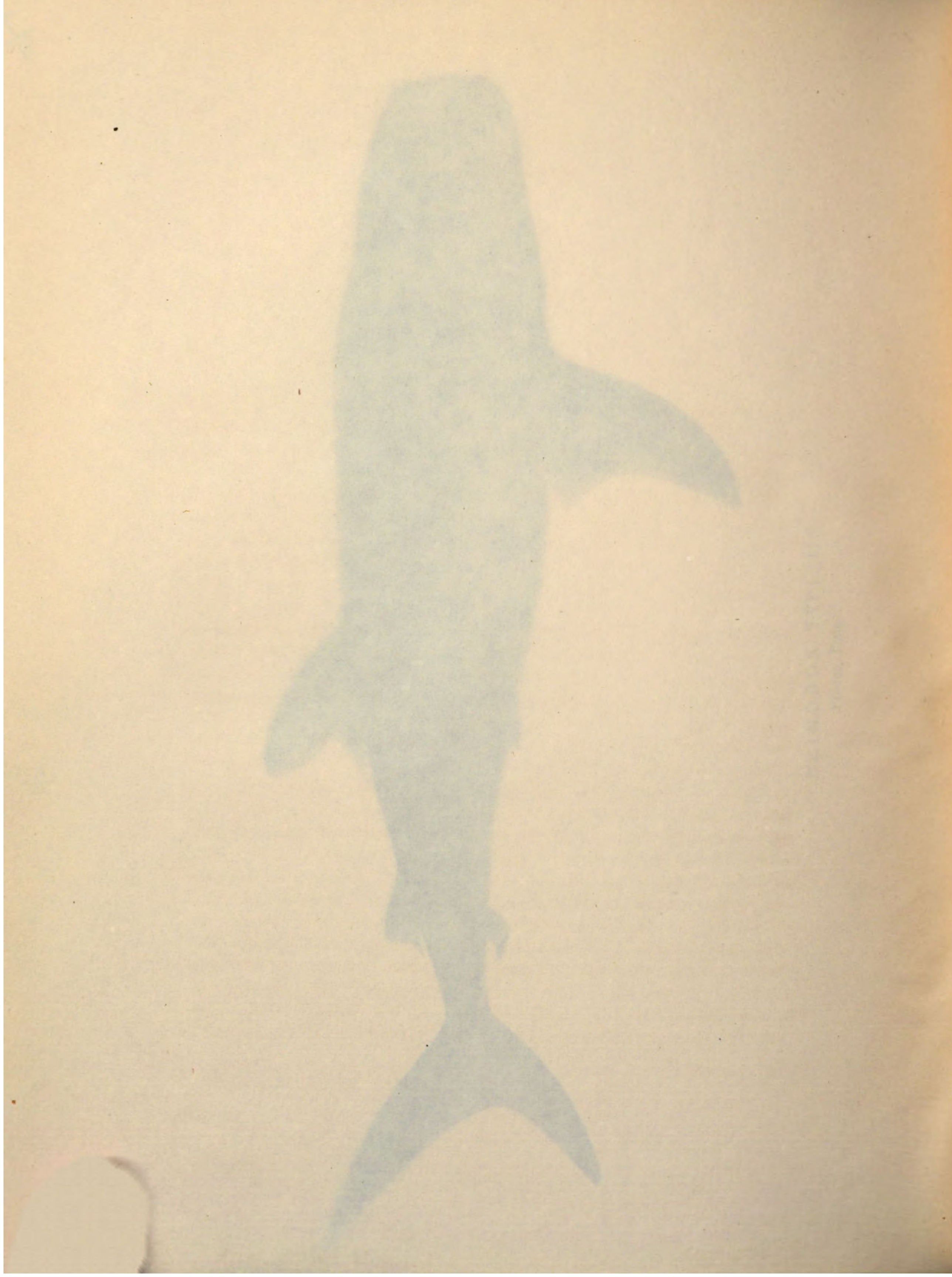
PISCES.—PLATE XXVI.

R. supra nigro-griseus purpureo-tinctus, capite antice pinnisque postice cærneo-violaceis; subtus, griseo-albus, cærneo-tinctus; capite supero, dorso, lateribus, pinnisque maculis lineisque albis variegatis; spiraculis bicarinatis; ore in rostri apice; dentibus parvis recurvis.

Longitudo 4 ped. apice ad extremitatem pinnæ caudalis 16 ped. 9 unc.

COLOURS.—The upper and lateral parts of the head and body dull lavender-purple, shaded with brownish red; the under surface of the head, the sides of the body inferiorly, and the belly, light wood-brown, tinted with flesh-red, which tint is very strong on the anterior portion of the head and the hinder edges of the fins. On the upper and lateral parts of the head and body, and also on several of the fins, the ground colour is much broken by a profusion of small circular white spots, and a great number of narrow vertical lines, which commence at the centre of the back and terminate at the belly. The spots are smallest and most numerous on the head and upper surface of the pectoral fins, on the other parts they are larger and more scattered; and, on the caudal fin, they are arranged in a single row, close to its upper edge; the second dorsal, the anal, and the ventral fins are without spots. Eyes coppery-green.

FORM, &c.—Head broad, depressed, and somewhat wedge shaped, the mouth opening directly in front; teeth small, recurved, closely congregated, and disposed in a broad transverse belt, along the inner surface of each jaw, immediately inside of the lips; eyes lateral and situated almost directly behind the angles of the mouth; pupil transversely oval; temporal orifice about three-quarters of an inch in diameter. Vertical section of body, in front of dorsal fin, somewhat triangular, and the back, between that fin and the middle of the hind head, slightly arched and strongly keeled; back, posterior to dorsal fin, flat and depressed. Sides of body irregular from two distinct longitudinal keels, which commence together a little in front of, and considerably above, the upper extremity of first branchia, and recede a little from each other as they proceed backwards. Of these, the lowermost



RHINODON TYPICUS.—Smith.

Pisces —Plate XXVI.

R. superne nigro-griseum purpureo-tinctum, capite antice pinnisque postice carneo-umbratis; subtus, griseo-album, carneo-tinctum; capite superne, dorso, lateribus, pinnisque maculis lineisque albis variegatis; lateribus bicarinatis; ore in rostri apice; dentibus parvis recurvis.

Longitudo e nasi apice ad extremitatem pinnæ caudalis 16 ped. 6 unc.

Colour.—The upper and lateral parts of the head and body dull lavender-purple, shaded with brownish red; the under surface of the head, the sides of the body inferiorly, and the belly, light wood-brown, tinted with flesh-red, which tint is very strong on the anterior portion of the head and the hinder edges of the fins. On the upper and lateral parts of the head and body, and also on several of the fins, the ground colour is much broken by a profusion of small circular white spots, and a great number of narrow vertical lines, which commence at the centre of the back and terminate at the belly. The spots are smallest and most numerous on the head and upper surface of the pectoral fins, on the other parts they are larger and more scattered; and on the caudal fin they are arranged in a single row, close to its upper edge; the second dorsal, the anal, and the ventral fins are without spots. Eyes coppery-green.

Form, &c.—Head broad, depressed, and somewhat wedge shaped, the mouth opening directly in front; teeth small, recurved, closely congregated, and disposed in a broad transverse belt, along the inner surface of each jaw, immediately inside of the lips; eyes lateral and situated almost directly behind the angles of the mouth; pupil transversely oval; temporal orifice about three-quarters of an inch in diameter. Vertical section of body, in front of dorsal fin, somewhat triangular, and the back, between that fin and the middle of the hind head, slightly arched and strongly keeled; back, posterior to dorsal fin, flat and depressed. Sides of body irregular from two distinct longitudinal keels, which commence together a little in front of, and considerably above, the upper extremity of first branchia, and recede a little from each other as they proceed backwards. Of these, the lowermost

pursues a waved direction, and at last is lost in, or coalesces with, the keel on each side of base of caudal fin; the upper again pursues a more direct course, becomes forked posteriorly, and both its branches terminate under, and anterior to, the second dorsal fin; the keel on each side of the tail very strong and thin at the outer edge. At the base of the upper lobe of the caudal fin, there is a transverse groove, to admit of the ready elevation of the fin, a power so necessary to direct the course of the fish in swimming. The first dorsal fin, posteriorly, is deeply emarginate, and the second dorsal has its inferio-posterior angle prolonged into a slender sharp point. Pectoral fins large, and their hinder edge, towards its base, with a distinct, large, triangular elongation. Ventral fins very small, and directly below the hinder portion of the first dorsal; anal fin also small, quadrangular, and with its superio-posterior angle prolonged into a point, its anterior edge directly under the hinder extremity of the base of the second dorsal. Caudal fin deeply forked, the upper portion larger and much longer than the lower. Branchiæ slightly waved, the first and second much the longest, and, together with the third, are in front of the base of pectoral fins; the fourth and fifth are directly over it.

Pharynx very large, and the inner extremity of each branchial canal obstructed by a sieve-like apparatus, consisting of a conjeries of cartilaginous tubes closely set together, directed laterally, and the inner extremity of each fringed with a delicate membrane offering an obstruction to the passage of anything but fluid. *Œsophagus* rather narrow, and at its commencement bends downwards towards the parietes of the abdomen, and forms nearly a right angle with the fauces, which gives the fish the power of completely preventing what enters its large mouth from being admitted into its stomach, unless desirable. The cardiac extremity of the stomach is very muscular, and the inner surface is studded with hard pointed nipple-like bodies, all of which are directed backwards, and offer an obstacle to the return of anything solid from the stomach: the rest of the inner surface of the stomach and the small intestines closely set with strong rugæ, in the stomach oblique, in the intestines nearly circular, and the latter, when about to terminate in the large intestines, is also furnished with a number of nipple-like bodies, which prevent solids from passing downwards. The termination of the small intestines is in the form of a ring, which projects into the large bowels, and forms an effective valve when any attempt is made to propel the contents of the large intestines backwards into the smaller ones. The inner surface of the former is furnished as in other sharks, with a spiral band, the one side of which is loose, and by this arrangement the alimentary fluid requires to pass over an extent of surface

sufficient to permit of the necessary absorption of the nutritive portion of the injesta. The rectum, internally, is quite smooth, and the gland which, in sharks generally, is situated behind it, also exists in this fish, and opens into the gut about six inches from the anus. On each side of the latter there is a large opening, through which a probe can be readily introduced into the cavity of the peritoneum, and into that cavity, it would appear, the sea water enters through these openings, as it contained about eight gallons perfectly pure, or at least only with some animal secretion.

The *liver* consists of two lobes nearly of equal size, the length of each three feet and a half; the greatest width thirteen inches, the least six. The *gall-bladder* is exterior to the substance of the liver, and situated on its concave or dorsal aspect, close to its base, before it divides into lobes. It is of a pyriform shape, and the duct is much convoluted, and so large as readily to admit the fore finger of a full-grown man; it discharges the bile into the upper extremity of the large intestines, and the point where it enters their outer coat is fully two inches higher than that at which it perforates the inner; the duct between these two points is contracted and tortuous, and the terminal opening is not larger than would admit a pea.

The *spleen* is closely connected with the inferior extremity of the stomach and the hinder surface of the small intestines, and, excepting where it winds under the apex of the former, is lobulate, as in the true sharks, and exhibits a striking resemblance to the spleen of *Alopias vulpes*, Raf. The *pancreas* is slender, and partially encircles the upper extremity of the large intestines.

DIMENSIONS.

	Feet.	Inches.
From mouth to 1st dorsal fin	8	6
1st to 2nd dorsal fin	2	0
2nd dorsal to caudal fin	1	8
Length of upper lobe of tail	4	0
lower lobe of tail	2	10
Distance between tip of nose and 1st branchia	2	10
Distance between tip of nose and eye	0	6
eye and temporal spiracle	0	4½
Width of mouth	2	8
From tip of nose to anterior edge of pectoral fin	3	3
Length of pectoral fin	3	2
Breadth at its base	2	0
Height of 1st dorsal fin	1	3
Breadth of head about one foot in advance of branchia	3	8½
Circumference of body immediately behind pectoral fins	9	3
Circumference of body one foot behind pectoral fins	8	5
Total length of fish	16	6

The stomach was empty, and hence the precise food of the fish could not be ascertained. That a portion of it, at least, is derived from the *mollusca*, &c.,

which are taken into the mouth and pharynx with the sea water which is required for the purifying of the blood, is to be inferred from the branchial openings being so guarded. That the fringe at the inner extremity of the tubes, which exist in the branchial canals, are for the purpose of intercepting such small animals as may be contained in the water, I infer from knowing that the whale (*Balæna*), which feeds on small mollusca, &c., has the inner edge of each layer of whalebone converted into a fine floating fringe, which permits the water taken into its huge mouth to escape, but intercepts all objects adapted for its food.

When our shark proceeds to feed, the first step it probably takes is to open its jaws to their full extent, in order to permit the mouth and pharynx to become filled with sea water. On that being accomplished, the jaws are then probably closed, in order that the water shall, by muscular efforts in the pharynx, be propelled through the tubes in the branchiæ, and forced thus to leave behind it whatever mollusca, &c., it may chance to contain. The powers of deglutition after this are probably called into action, and the œsophagus, no doubt, is raised and straightened, so as to offer a ready passage downwards to whatever shall have been collected during the escape of the water. The mammillary eminences around the cardiac orifice of the stomach appear to indicate that some, at least, of the articles of food are swallowed alive, and that they require to be bruised, and also prevented from re-entering the œsophagus, both of which are probably effected by the processes just mentioned. The direction taken by the upper part of the œsophagus is evidently for the purpose of enabling it the more effectively to resist the entrance of the water, when being expelled through the branchiæ by the muscular contraction of the pharynx.

The specimen described was the only one that had been seen at the Cape within the memory of any of the fishermen. At the time it was discovered, it was swimming leisurely near the surface of the water, and with a certain portion of the back above it. When approached, it manifested no great degree of fear, and it was not before a harpoon was lodged in its body that it altered its course and quickened its pace.

The prepared specimen is deposited in the museum of the Jardin des Plantes of Paris.

CLARIAS. CAPENSIS.

(Pisces Plate 27.)

CLARIAS CAPENSIS.—Cuv. et Val.

Pisces.—Plate XXVII.

C. superne sordidé olivacea, subtus subcarnea pallide flavo-brunneo-tincta; capite depresso, ore anticè hiante; naribus parvis superne patentibus; pinnâ caudale posticè lunuata; lineâ laterale anticè curvata postice rectâ.

Longitudo e capitis apicè ad extremitatem pinnæ caudalis 25 unc.

Colour.—The upper and lateral parts of the head, the back, the sides of the body, and the fins, intermediate between apple and oil-green, darkest on the head. The lower parts of the sides of the head and the body, as also all the under parts, intermediate between flesh-red and wood-brown, and these, in common with the parts first specified, exhibit a distinct coppery tint in certain lights; cirrhi light honey-yellow; eyes straw-yellow.

Form, &c.—Figure rather slender; head long, broad, depressed, and nearly as wide at the muzzle as at the hindhead; body, anteriorly, subcylindrical, posteriorly compressed. In fresh specimens the surface of the head and body, which are destitute of scales, are smooth and covered with a semi-transparent glutinous fluid, like what occurs on eels (*Anguilla*), &c. In dried specimens the upper and lateral parts of the head appear covered with large bony plates, the surface of which is rough and granular, as will be seen on reference to the figure representing a dried head. Three of these plates, in a row, are distinctly visible on the side of the head behind the eye, and a fourth under a portion of the second and third, appearing to constitute a rudimentary gill-cover. The covering of the upper part of the head appears to be undivided, and to be only variegated by the existence of a few furrows, destitute of granules, and by two oval depressions in the course of the mesial line; the anterior is of considerable length, situated between the eyes, and considerably wider behind than in front, the other is towards the nape, and very short as compared with the former. The hinder edge of the plate covering the upper surface of the head has three projecting points, with two semi-lunar crescents between them, the convexity of each forwards; the middle projection is in the centre of the nape, in front of the dorsal fin. Mouth broad and opening directly in front; jaws short and of equal length; *cirrhi* eight, those at the

angles of the mouth thickest and longest, and in young specimens often reach almost to the point of the pectoral spines. Nostrals small, ovate, opening upwards, and furnished each with a slender cirrhus in front of its anterior extremity. Eyes rather small, in the sides of the head, a little posterior to the angle of the mouth, and open laterally. Pectoral fins small, rounded at the apex, and in front armed with a strong depressed bony spine, the anterior edge of which is finely serrated. Dorsal and anal fins long, low, and throughout nearly of equal height. Ventral fins small, and oval at the point. Caudal fin long, and its apex strongly lunate or semi-circular. Lateral line about midway between the centre of the back and the belly, and anteriorly, near its origin, slightly arched, elsewhere quite straight; it terminates at the base of the caudal fin, about midway between its upper and under edges.

B. 10; D. 66; P. $\frac{1}{8}$; V. 6; A. 51; C. 19.

Length of the specimen described 25 inches; the head, measuring to the point of the bony projection on the nape, rather more than a fourth of the whole length.

This fish occurs in most of the rivers of the interior of South Africa, more particularly in such as abound in deep pools, the walls of which are of clay or mud. It is common in the Orange River and its tributaries, but has not yet, so far as I know, been taken in any of the rivers more to the southward. The specimen from which the description is taken, was caught in a large lake near to Port Natal, immediately to the eastward of the *Umgeni* river. It took the bait with avidity, and many more might hâve been captured had I thought it necessary to continue casting the hook.

BIBLIOTHECA
REGIA
MONACENSIS.

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1. Mugil Constantiœ Fig. 1 & 1a.
2. Mugil Macrolepis. Fig. 2 & 2a.

Pisces Plate 28.

Day & Haghe Lith^rs to the Queen.

MUGIL CONSTANTIÆ.—Cuv. et Val.

PISCES.—PLATE XXVIII. FIG. 1 AND 1 a.

Mugil cephalus, Cuv. et Val. Hist. Nat. des Poissons, tom. xi. p. 195.

Colours.—The upper surface of the head, the back, and the sides above the lateral line intermediate between lavender-purple and bluish grey; the top of the head and the middle of the back lightly tinged with olive-green; the sides of the head, body, and all the under parts white, tinged with pale yellow, and the parts immediately below and behind the eyes clouded with pale violet-purple;—the centre of each of the scales of the back and sides with a slight cloud of brownish red, which gives an appearance of a number of horizontal bars on each side of the body between the pectoral fins and the base of the caudal. The scales on all parts have a light silvery lustre. Dorsal and caudal fins pale reddish purple shaded at their base, between the rays, with a darker tint of the same colour; pectoral, ventral, anal, and caudal fins pale reddish purple, clouded or shaded with yellow.

Form, &c.—Figure robust, the abdomen generally very prominent; dorsal outline slightly arched, ventral very convex; a scale with an elongated point in the axilla of each ventral fin. Three rows of large quadrangular scales under each eye; the scales of operculum very large and the hinder edge of each semicircular. Scales of the body large and arranged in fifteen longitudinal rows, thirty-eight scales in the row immediately over the base of the pectoral fin, the hinder edge of each somewhat three-sided. The scales close to the apex of the head very small, those immediately behind them considerably larger, the others of the upper surface of the head very large and irregularly shaped: nostrils double on each side, placed at a considerable distance from each other, and the hinder nearest to the largest. Eyes large; gape rather small; teeth very fine; nose moderately wide and slightly arched. Head one-fifth of the total length of the fish, reckoned to the centre of the hinder edge of the caudal fin. Posterior edge of second dorsal, anal, and caudal fins lunate, of ventral nearly even; hinder edge of ventral fin superiorly slightly pointed. Caudal fin toward upper and lower edges coated with minute membranous scales.

D. 4; 1 D. 8; P. 16; V. 1; A. 3; C. 18.

Inhabits fresh-water lakes and rivers.

MUGIL CONSTANTIÆ.—Cuv. et Val.

Pisces.—Plate XXVIII. Fig. 1 and 1 *a*.

M. superne purpureo-griseus flavo-viridi tinctus, inferne albus flavo-nebulatus; latere lineis octo novem ve longitudinalibus notato; squamis subocularibus magnis in seriebus tribus dispositis; pinnâ anale postice lunatâ; naribus duplicibus distitis.

Mugil constantiæ, Cuv. et Valen. Hist. Nat. des Poissons, tem. xi. f. 107.

Colour.—The upper surface of the head, the back, and the sides above the lateral line intermediate between lavender-purple and bluish grey; the top of the head and the middle of the back lightly tinted with oil-green; the sides of the head, body, and all the under parts white, clouded with straw-yellow, and the parts immediately below and behind the eyes shaded with pale violet-purple;—the centre of each of the scales of the back and sides with a slight cloud of brownish red, which gives an appearance of a number of horizontal bars on each side of the body between the pectoral fins and the base of the caudal. The scales on all parts have a light silvery lustre. Dorsal and caudal fins pale reddish purple shaded at their base, between the rays, with a darker tint of the same colour; pectoral, ventral, anal, and caudal fins pale reddish purple, clouded or shaded with yellow.

Form, &c.—Figure robust, the abdomen generally very prominent; dorsal outline slightly arched, ventral very convex; a scale with an elongated point in the axilla of each ventral fin. Three rows of large quadrangular scales under each eye; the scales of operculum very large and the hinder edge of each semicircular. Scales of the body large and arranged in fifteen longitudinal rows, thirty-eight scales in the row immediately over the base of the pectoral fin, the hinder edge of each somewhat three-sided. The scales close to the apex of the head very small, those immediately behind them considerably larger, the others of the upper surface of the head very large and irregularly shaped; nostrils double on each side, placed at a considerable distance from each other, and the hindermost much the largest. Eyes large; gape rather small; teeth very fine; nose moderately wide and slightly arched. Head one-fifth of the total length of the fish, reckoned to the centre of the hinder edge of the caudal fin. Posterior edge of second dorsal, anal, and caudal fins lunate, of ventral nearly even; hinder edge of ventral fin superiorly slightly pointed. Caudal fin toward upper and lower edges coated with minute membranous scales.

1 D. 4; 2 D. 8; P. 16; V. $\frac{1}{5}$; A. 8; C. 16.

Inhabits fresh-water lakes and rivers.

MUGIL MACROLEPIS.—Smith.

Pisces—Plate XXVIII. Fig. 2 and 2 *a*.

M. superne pallide purpureo-griseus; dorso capiteque superne flavo-viridi-tinctis; lateribus inferne abdomineque flavo-albis, purpureo-tinctis; pinnâ anale versus corpus carnosâ, squamis tecta, postice fere rectâ; corporis squamis magnis, duris, in seriebus longitudinalibus undecim dispositis; naribus duplicibus approximatis.

Colour.—The upper surface of the head, the back, and the upper parts of the sides intermediate between lavender-purple and pearl-grey; the upper part of the head and centre of the back anterior to dorsal fin tinted with oil-green. Lower parts of sides and the abdomen yellowish white faintly clouded with lilac-purple; the hinder edge of each scale semipellucid. Operculum pale purple-white, slightly clouded with violet-purple; infra-orbital space white tinted with ochre-yellow.

Form, &c.—Figure moderately robust, dorsal outline nearly straight, ventral between head and anal fin much arched, behind anal nearly straight. Four rows of quadrangular scales below eyes, each row directed slightly downwards, the two lowermost rows of each side commence immediately at the hinder extremity of the lower jaw; scales of operculum large, and the hinder edge of each somewhat three-sided; the scales adjoining the outer margin of the eye smallest. Scales of the back and sides very large and hard, the hinder edge of each arched, some towards the middle of the body more or less pointed; they are disposed in eleven longitudinal rows, the row immediately over base of pectoral fin consisting of thirty-four scales. The base of the anal fin pulpy, and covered with moderately large scales; the rayed portion of anal, ventral, second dorsal, and caudal fins coated with small delicate membranous scales; hinder edge of ventral and anal fins nearly even; pectoral fin superiorly elongated and pointed; the base of ventral and first dorsal margined on each side with an elongated and pointed scale. Head one-fifth of length of fish reckoning to middle of the hinder edge of caudal fin. Scales of upper surface of head very large and irregularly shaped; nostrils double, those of each side close together, and the hindermost much the largest; nose moderately broad and slightly arched.

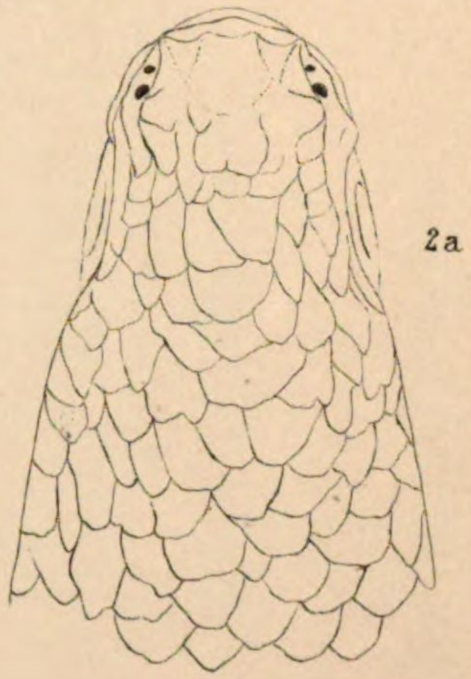
Length of specimen described 15 inches.

1 D. 4; 2 D. 6 or 7; P. 14; V. 5; A. 9; C. 15.

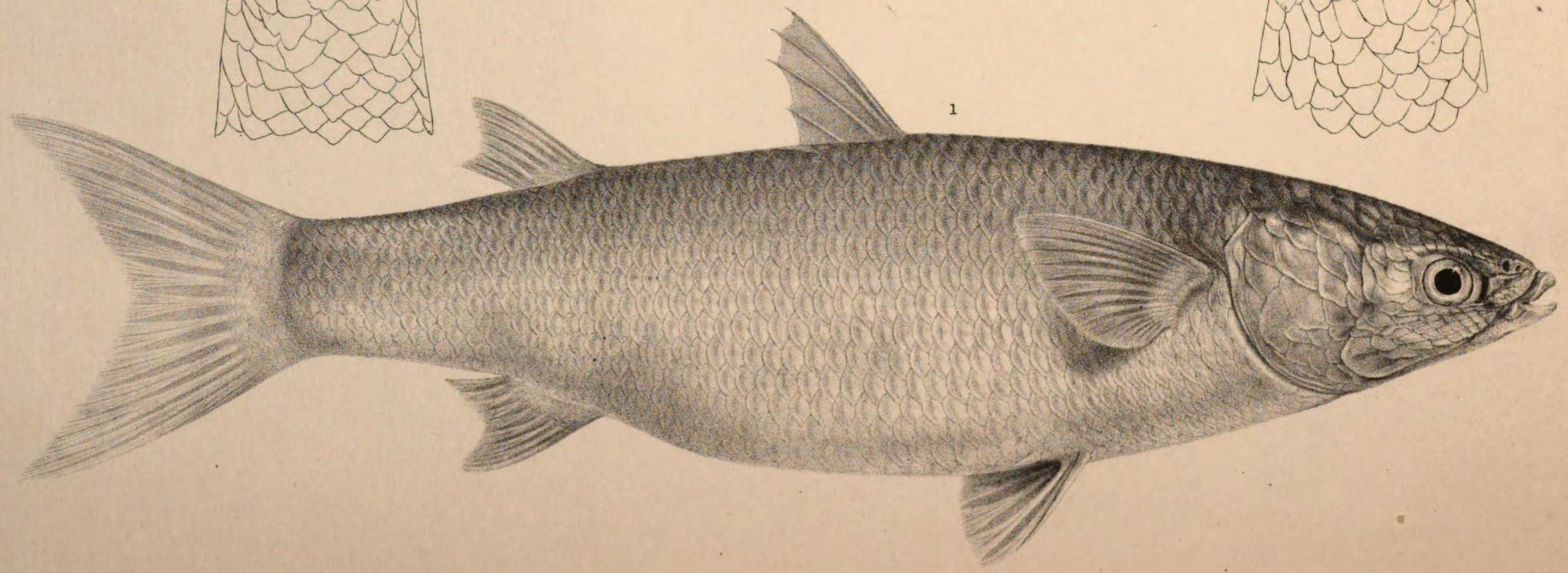
Inhabits rivers and fresh-water lakes.

2

1a



2a



1

Mugil. Richardsonii. Fig. 1 & 1a.
Mugil. Euronotus. Fig. 2 & 2a.

Pisces. Plate 29.

Day & Haghe. Lith.rs to the Queen.

MUGIL RICHARDSONII.—Smith.

Pisces.—Plate XXIX. Fig. 1 and 1 *a*.

M. superne subochreus flavo-viridi tinctus, inferne subochreus pallide purpuro-nebulatus; squamis subocularibus in seriebus longitudinalibus quatuor dispositis; corporis squamis in seriebus longitudinalibus sexdecim; naribus duplicibus approximatis; capitis squamis inter nares parvis.

Colour.—The upper surface of the head, the back, and the upper half of the sides intermediate between ochre-yellow and wood-brown, strongly tinted with oil-green, the colours of the upper surface of the head and middle of the back darkest; the lower half of the sides, the abdomen, and the sides of the head, the same as the ground colour of the upper parts, and in common with the latter distinctly clouded with light violet-purple. The first dorsal fin light lavender-purple, the other fins pale greyish blue shaded with yellow.

Form.—Figure moderately robust; dorsal outline very slightly arched, ventral between the head and anal fin very convex, behind anal fin nearly straight. Head moderately long and posteriorly rather deep; body, including caudal fin, measuring to its centre three and a half times the length of the head. The scales on the upper surface of the head towards the nose rather small, posteriorly large and irregularly shaped; nostrils on each side double, close together, and the hindermost considerably the largest; scales below eye small, quadrangular, and arranged in four oblique rows; scales behind eyes and covering operculum large and irregularly shaped. Scales of body moderately large, rather thin, strongly arched posteriorly, and disposed in sixteen longitudinal rows, forty-six scales in the row immediately over the pectoral fin. Hinder edge of second dorsa and anal fins slightly lunate; hinder edge of pectoral fin slightly convex, and the upper point posteriorly obtuse; hinder edge of ventral fins slightly convex; caudal fin deeply lunate; ventral fins each with an elongated pointed scale as an edging to the bed of the fin; first dorsal fin with two scales of the same character, one on each side of its base. Pectoral, ventral, second dorsal, anal, and caudal fins partly coated with very fine, small, membranous scales. Length of specimen described twelve inches.

1 D. 4; 2 D. 7; P. 16; V. 5; A. 9; C. 14

Inhabits the seas of the eastern and western coasts.

MUGIL EURONOTUS.—Smith.

Pisces.—Plate XXIX. Fig. 2 & 2 *a*.

M. capite superne dorsoque viridi-brunneis; lateribus griseo-albis pallide violaceo nebulatis; corporis squamis seriebus longitudinalibus tredecim dispositis; squamis capitis inter nares parvis; naribus duplicibus approximatis.

Colour.—The upper surface of the head and the back intermediate between pale brownish red and oil-green; sides superiorly a very pale tint of the same colour as that of the back; sides inferiorly and the belly greyish white clouded with pale violet-purple; space under eyes and the sides of the head in front of operculum tinted with ochre-yellow. Operculum, back, and sides tinted here and there with violet-purple. Fins intermediate between pale brownish purple-red and pale lavender-purple, the ventral and anal tinted with yellow.

Form, &c.—Figure moderately slender; dorsal outline slightly arched, ventral, between apex of lower jaw and the hinder extremity of the base of the anal fin, strongly arched, between anal and caudal fins nearly straight; a scale with a prolonged point in the axilla of each ventral fin. Head small, conical, and moderately long; nose rather narrow and slightly arched; body and tail, measured to the centre of the latter, very nearly four times the length of the head. Nostrils double on each side, close to each other, and the hinder one rather the largest. Three nearly horizontal rows of quadrangular scales under each eye; scales of operculum large, the hinder edge of each semicircular. Scales of back, sides, and belly large and disposed in thirteen longitudinal rows, forty-four scales in the row immediately over the base of the pectoral fin. Hinder edge of second dorsal and anal fins lunate, of ventrals nearly even; hinder edge of pectoral fins superiorly pointed, elsewhere slightly arched, caudal fin slightly lunated. The membranes connecting the rays of all the fins semi-pellucid. Upper jaw with a row of short criniform teeth. Length of specimen described ten inches.

1 D. 4; 2 D. 7; P. 15; V. $\frac{1}{5}$; A. 10; C. 14.

Inhabits the seas of the eastern and western coasts.

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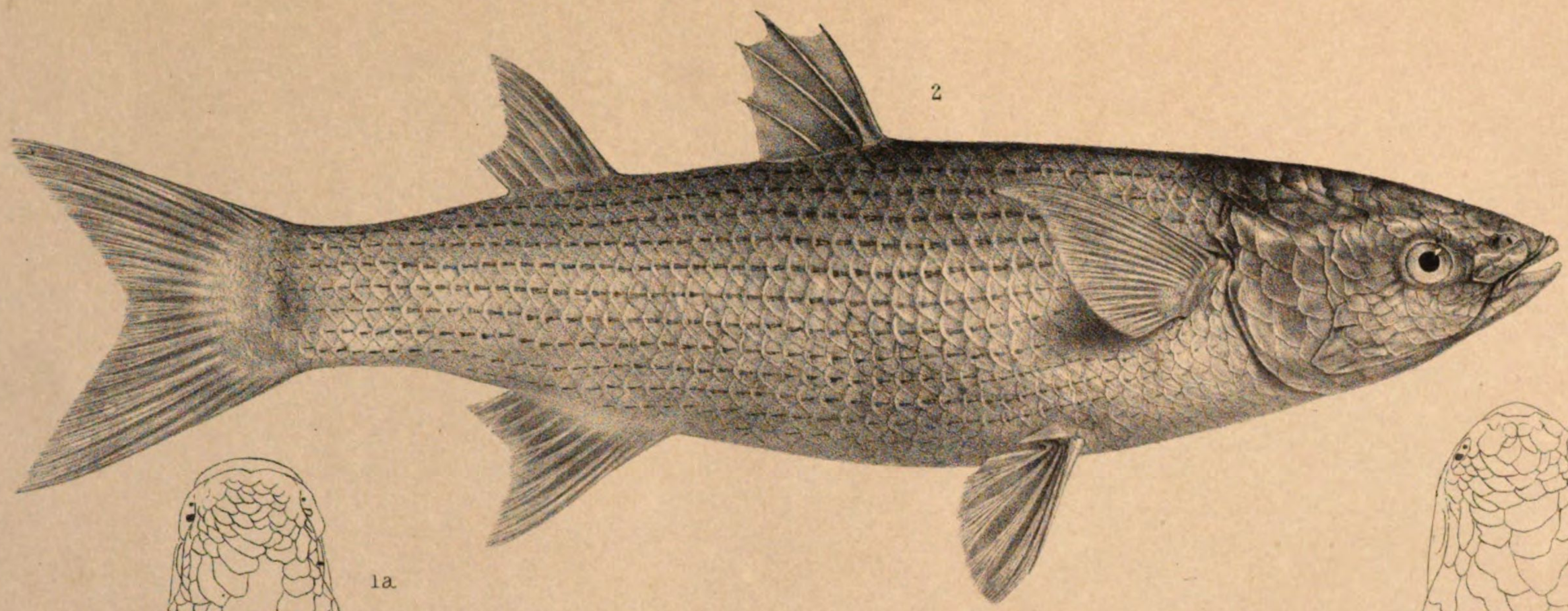


Mugil Capensis. Fig.1 & 1a.
Mugil multilineatus. Fig.2 & 2a.
(Pisces Plate 30.)

Day & Haghe Lith.rs to the Queen

MUGIL CAPENSIS.—Cuv. et Val.

Pisces.—Plate XXX. Fig. 1 and 1 *a*.

M. capite superne dorsoque viridi-brunneis; lateribus superne pallide cæruleo-purpureis, inferne griseo-albis, lineis longitudinalibus novem signatis; corporis squamis in seriebus quindecim dispositis; naribus duplicibus approximatis.

Mugil capensis, Hist. Nat. des Poisson's, par Cuv. et Val. tom. xi. fol. 108.

Colour.—The upper surface of the head intermediate between light brownish red and oil-green; back and sides, superiorly, intermediate between rose-red and lilac-purple; sides and belly inferiorly greyish white, all with tints of pale violet-purple. Back and sides with nine rather narrow longitudinal bars or stripes of a colour intermediate between brownish red and oil-green. Space under eyes strongly tinted with yellow; operculum pale lavender-purple with tints of violet-purple. Fins intermediate between pale brownish purple-red and pale lavender-purple, all, excepting the first dorsal, slightly tinted with yellow.

Form, &c.—Figure moderately robust; dorsal outline slightly arched, ventral strongly arched in front of the dorsal fin, behind it nearly straight. Head rather small; nose narrow and slightly arched; nostrils double on each side, close together, and the hinder one much the largest; body and tail measured to the centre of the latter four and a quarter times the length of the head. Scales under the eyes quadrangular, and arranged in four horizontal rows; scales immediately behind eye rather large, irregularly shaped, and directed downwards, those of operculum much larger and directed downwards and backwards; scales of body large, and the hinder edge of each three-sided; they are disposed in fifteen longitudinal rows, forty-four scales in the row immediately over the pectoral fin. The hinder edge of the second dorsal, the anal, and the caudal fins slightly lunate; the posterior and superior extremity of each pectoral fin pointed, the hinder edge nearly even. Base of anal and caudal fins coated with several rows of regular scales. Length of specimen described $12\frac{1}{2}$ inches.

1 D. 4; 2 D. 8; P. 16; V. $\frac{1}{5}$; A. 10; C. 15.

Inhabits the seas of the eastern and western coasts, and also some of the rivers and lakes of the colony.

MUGIL MULTILINEATUS.—Smith.

Pisces.—Plate XXX. Fig. 2 and 2 *a*.

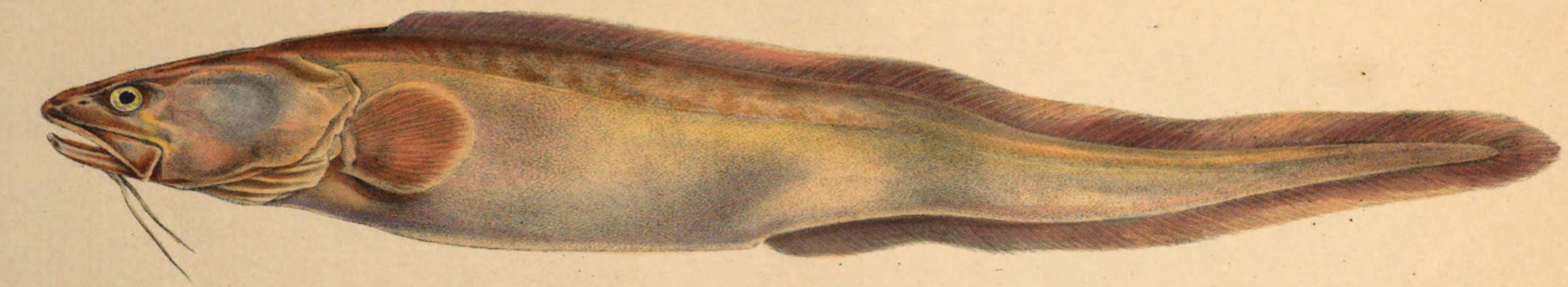
M. capite superne dorsoque pallide griseo-purpureis; lateribus abdomineque purpureo-albis, lateribus lineis duodecim longitudinalibus pallide brunneo-rubris signatis; corporis squamis in seriebus duo decim dispositis; naribus duplicibus approximatis.

Colour.—The upper surface of the head and the back intermediate between brownish purple-red and lilac-purple, both tinted with oil-green; sides superiorly the same colour only lighter; sides inferiorly and belly pale pearly white tinged with yellow, and clouded, like the upper parts of the sides, back, and head, with pale tints of violet-purple; the sides varied with twelve longitudinal interrupted pale brownish red lines, the uppermost the broadest. Infraorbital spaces strongly tinged with yellow; fins intermediate between pale bluish purple-red and lilac-purple, all but the first dorsal faintly tinted with yellow.

Form, &c.—Figure moderately slender; dorsal outline nearly straight, ventral considerably arched; an elongated scale external to the base of each ventral fin proceeding from the first ray, and a similar one on each side of the base of the first dorsal fin. Head long, conical, and behind rather deep; nostrils double on each side, rather close, and the hinder one the largest; upper surface of head slightly convex; nose narrow and slightly rounded. Body with caudal fin measured to its centre rather more than three times the length of the head. Scales toward nose small, on the other parts of the upper surface of the head large and irregularly shaped; scales under the eyes subquadrangular and disposed in four oblique longitudinal rows; scales behind eyes, and on operculum large and irregularly shaped. Scales of body moderately large, and the hinder edge of each arched; they are arranged in fifteen longitudinal rows, about forty-five in the row immediately over the pectoral fin. Hinder edge of second dorsal, anal, and caudal fins lunate; pectoral fin superiorly elongated and pointed. Length of specimen described $12\frac{1}{2}$ inches

1 D. 4; 2 D. 7; P. 16; V. $\frac{1}{5}$; A. 9; C. 15.

Inhabits the seas of the eastern and western coasts, also some of the rivers of the interior.



XIPHIURUS CAPENSIS

(Pisces_Plate 31)

XIPHIURUS* CAPENSIS.—Smith.

Pisces.—Plate XXXI.

X. pallide carneus purpureo flavoque variegatus; maxillæ superioris dentibus versus apicem magnis; pinna pectorali subovali.

Longitudo è nasi apice ad caudæ extremitatem 38 unc.

Koning Klip visch of the Cape Colonists.

Colour.—Prevailing colour light sienna-yellow, clouded or shaded with a variety of other hues; the sides of the head behind the eyes, the sides of the body inferiorly, the belly and the tail towards its point, faintly tinted with imperial-purple. The sides of the head under and in front of the eyes, and the sides of the body and tail in the course of the lateral line, are variegated with shades of pale saffron-yellow; *branchial* membrane striped longitudinally with a colour intermediate between light red and gamboge-yellow, and tints of the same are observed towards the point of the upper jaw. Lower jaw pale imperial-purple. Pectoral fin sienna-yellow, shaded with yellowish-brown. The other fin, formed by the union of dorsal, anal, and caudal fins, pale aurora-red, shaded with purplish red. Eyes greenish white.

Variety, Fig. 2.—Sides of head pale aurora-red, shaded immediately behind eyes with king's-yellow, and in front of eyes with pale brownish red; preoperculum superiorly purplish red, with an intermixture of imperial-purple; operculum, particularly the upper portion, strongly tinted with imperial-purple. *Branchial* membrane striped longitudinally with pale blackish purple. The sides of the body near the lateral line purplish red, clouded with oil-

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* *Ch. Gen.* *Teeth* of upper jaw in two bands, the intermaxillary and palatal; those of lower in one, the teeth of the outer row of each band long, and formed for holding, the others very small; *vomer* armed with teeth of the same description. *Operculum* near its upper and hinder edge armed with a strong, bony spine. *Ventral* fins wanting. *Dorsal*, *caudal*, and *anal* fins united. *Barbels*, two, pendent from the under surface of the lower jaw, a little in front of the angle of the mouth. *Body* subcylindrical. *Tail* compressed and ensiform. *Scales* small. *Branchial* rays, seven.

green ; of the tail, oil-green with faint shades of brown. The sides, below the lateral line, towards the head, imperial-purple, clouded close to the line with a clear deep green, towards the tail with pale brownish red. Sides inferiorly and belly pale aurora-red, clouded with pale purplish red; sides of tail inferiorly a pale purple, tinged with flesh-red; space immediately under base of pectoral fin, pale king's-yellow. Pectoral fins aurora-red, shaded strongly with hyacinth-red ; the other fin on the back and at the point of the tail pale purplish red, the dorsal portion at its base shaded with imperial-purple, the anal to nearly the point of the tail light imperial-purple, edged towards its anterior extremity with greenish yellow. Eyes pale lemon-yellow. *Cirrhi*, pendent from anterior part of throat, aurora-red, tinted with brown.

Form, &c.—Head long, and rather slender; body moderately robust, and slightly compressed ; abdomen protuberant; tail narrow, tapered, and compressed strongly towards its apex. Gape moderately wide. The intermaxillary bones long, and the teeth towards the point of the jaw much the largest ; in the lower jaw, those towards the angle of the mouth the largest. The palatine teeth are nearly of the same size as those of the anterior portion of the intermaxillary row, those of the *vomer*, which form the junction between the palatal teeth of the two sides, are crowded and rather smaller. Each of the rows of large teeth, as well as those on the vomer but particularly the intermaxillary row, has internally, at their base, a stripe of very short and slender teeth. Eyes rather large, and directly above the angle of the mouth. Nostrils longitudinally ovate, and about midway between the eye and the point of the nose. Operculum large; preoperculum rather narrow, with a strong osseous spine, towards its hinder edge, a little below the upper extremity of the branchial opening. Between the *rami* of the lower jaw, nearly directly under the angle of the mouth, there is a small bone included in the surrounding soft parts, from which depends two slender feelers, from two to three inches in length. These are, by means of a special mechanism, retained either in a vertical or horizontal position, according to the will of the fish. Skin of the head smooth and without scales, that of the body and tail covered with small subovate scales buried in the skin, scarcely imbricate, and not distinctly visible till the surface is quite dry. Pectoral fins oval, the central portion of the hinder edge rather projecting beyond the line of curve on each side of it, in which respect it differs slightly from the pectoral fin of Fig. 2. Dorsal, caudal, and anal fins, regularly joined, the anterior portion of the dorsal, and the greater part of the anal, rather narrower than the posterior portion of the dorsal and the caudal. The lateral line commences at the upper extremity of the

branchial opening, and terminates at the base of the caudal fin, having a slightly waved course.

Variety.—Body bulky; head large, and anteriorly, towards the nose, its curvature is abrupt instead of gradual, as in the individual already described.

DIMENSIONS.

	In.	Lines.		In.	Lines.
Length from the nose to the point of the tail	38	0	Distance between the nose and the eye .	2	5
the nose to the upper extremity of the branchial opening...	7	10	the nose and the origin of the dorsal fin ...	10	0
the nose to the angle of the mouth.....	3	0	the nose and the origin of the anal fin	18	8

During one of the several earthquakes which occurred many years ago at the Cape of Good Hope, one or more sandbanks were formed near the entrance to Table Bay, and, not long after, the first specimens of this fish were obtained. Since then it has always been in the market; but on no occasion in great abundance: hence, owing to that circumstance and to the esteem in which it is held as an article of diet, it generally brings a high price. I am not prepared to say the two figures in the plate represent the same species, nor yet different ones. The one marked Fig. 2, is considered by fishermen to be different; and, in support of their opinion, they urge that it is always found on a bank which is at a very great depth below the surface of the water; while that marked Fig. 1, is never found on that bank, but always on those with a less depth of water.

It is fished after the manner of the cod-fish, and, in many respects, bears a close resemblance to the *Gadidæ*.

31 Tafeln

Werne

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MDZ Münchener DigitalisierungsZentrum Digitale Bibliothek

Smith, Andrew,

Illustrations of the zoology of South Africa consisting chiefly of figures and descriptions of the objects of natural history collected during an expedition into the interior of South Africa, in the years 1834, 1835, and 1836; fitted out by 'The Cape of Good Hope Association for exploring
Bd.: [3]

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